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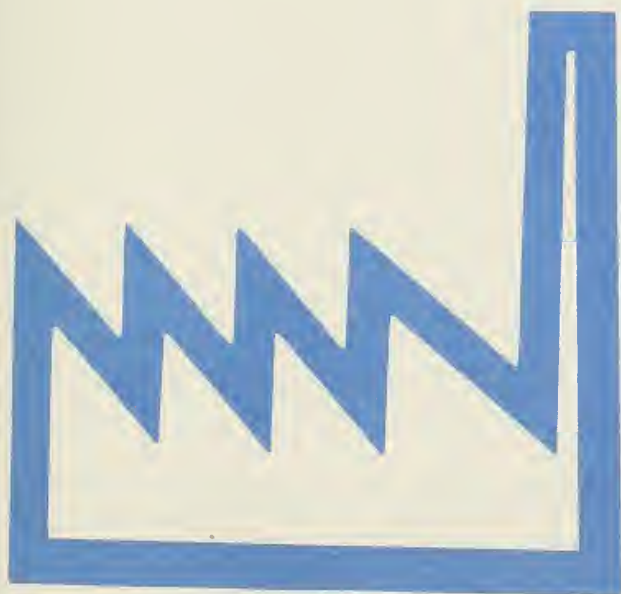
1987

Census of Manufactures

MC87-S-7

SUBJECT SERIES

Manufacturers' Shipments to the Federal Government



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If you have any questions concerning the statistics in this report, call (301) 763-5616.

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Issued April 1991



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INTRODUCTION

SUMMARY OF SURVEY RESULTS

The total value of shipments by private manufacturing firms in 69 selected Federal Government oriented industries was estimated at \$828.9 billion in 1987, of which \$155.1 billion or 19 percent was accounted for by shipments to the Federal Government. The Federal agency with the largest dollar volume of procurement during 1987 was the Department of Defense (DOD) with \$135.4 billion, followed by the National Aeronautics and Space Administration (NASA) with \$4.3 billion and the Department of Energy (DOE) with \$1.8 billion. The "other agencies" category (i.e., agencies other than DOD, NASA, and DOE; receiving agencies not known to the manufacturer; and plants which have less than \$1 million in Federal shipments) was estimated at \$13.6 billion. Of the \$155.1 billion of manufactured products shipped, \$119.7 billion represented shipments by prime contracts, and \$35.4 billion were done on indirect or subcontracts.

Total employment in all Federal Government oriented industries in 1987 was estimated to be 5.2 million, of which 1.4 million employees were engaged in work related to Government expenditures for manufactured products. By agency, DOD shipments supported an estimated 1.2 million employees; NASA, 41,500; DOE, 25,300; and "other agencies," 141,400.

Twenty industries shipped more than \$1 billion of their products to the Federal Government. These industries were led by SIC 3812, Search and Navigation Equipment, at \$31.1 billion; SIC 3721, Aircraft, at \$22.5 billion; and SIC 3761, Guided Missiles and Space Vehicles, at \$20.2 billion.

SOURCE OF DATA

These data are based on the 1987 Census of Manufacturers Survey of Manufacturers' Shipments to Federal Government Agencies. The survey sample included plants

in 69 of the approximately 450 four-digit Standard Industrial Classification manufacturing industries. The 69 industries were identified as having engaged extensively in business with the Federal Government. The majority of the 69 industries are grouped in Major Groups 34, 35, 36, 37, and 38. Appendix A provides limitations of the data and an explanation of the terms. Appendix B describes the survey sample and estimating procedure. Appendix C contains reproductions of the report form and instructions.

INDUSTRIAL CLASSIFICATION

The sample survey panel was selected to represent 69 industries as the industries were defined in the 1977 Standard Industrial Classification. After collecting information for this survey and for the Census of Manufactures, plants were classified in industries based on 1987 SIC definitions. Tables show estimates under both systems. See appendix A for limitations of the data. See appendix D for the relation of 1977 to 1987 SIC industries.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used in this publication:

-	Represents zero.
(D)	Withheld to avoid disclosing data for individual companies.
(NA)	Not available.
(X)	Not applicable.
DOD	Department of Defense.
DOE	Department of Energy.
NASA	National Aeronautics and Space Administration.
n.e.c.	Not elsewhere classified.
SIC	Standard Industrial Classification.

Table 1. Employment, Value Added, Value of Shipments, and Government Shipments, by

(Employment in thousands; value in million dollars)

SIC code	Industry	Employees	Value added by manufacture	Total value of shipments and receipts	Government shipments			
					Total		Prime contracts	
					Employees	Value of shipments	Employees	Value of shipments
	1987 SIC BASIS							
	All Industries -----	5 249.2	375 246.9	828 909.7	1 436.0	155 146.7	1 052.6	119 712.1
28	Chemicals and allied products-----	21.9	2 330.9	3 735.6	10.0	700.0	7.8	538.7
2813	Industrial gases -----	8.1	1 572.5	2 617.8	0.2	59.5	0.1	41.7
2892	Explosives -----	13.8	758.4	1 117.8	9.8	640.5	7.7	497.0
29	Petroleum and coal products-----	74.6	14 223.3	118 216.1	3.0	4 279.4	2.7	3 865.6
2911	Petroleum refining -----	74.6	14 223.3	118 216.1	3.0	4 279.4	2.7	3 865.6
30	Rubber and miscellaneous plastics products -----	138.4	9 008.7	16 658.8	2.7	261.5	1.7	186.8
3011	Tires and inner tubes -----	65.4	5 559.4	10 427.4	0.6	57.4	0.5	45.0
3052	Rubber and plastics hose and belting -----	23.2	1 240.8	2 268.2	0.3	26.4	0.1	7.2
3061	Mechanical rubber goods -----	49.8	2 208.5	3 963.2	1.8	177.7	1.1	134.6
33	Primary metal industries -----	119.3	6 533.2	15 167.0	6.1	399.3	0.5	43.4
3357	Nonferrous wiredrawing and insulating -----	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3363	Aluminum die-castings -----	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3365	Aluminum foundries -----	26.3	1 035.9	1 871.7	3.7	213.1	(A)	0.5
34	Fabricated metal products -----	474.2	24 842.8	44 766.5	109.7	9 550.1	77.6	7 019.8
3441	Fabricated structural metal -----	80.9	3 616.4	8 666.7	11.8	961.5	8.9	778.2
3443	Fabricated plate work (boiler shops) -----	74.6	3 467.4	6 795.4	7.9	558.3	0.1	7.7
3452	Bolts, nuts, rivets, and washers -----	52.0	2 995.8	5 084.0	3.1	247.2	1.0	81.1
3463	Nonferrous forgings -----	7.3	428.2	1 003.7	2.3	302.0	(A)	0.5
3482	Small arms ammunition -----	9.0	626.7	889.2	3.7	377.1	3.6	368.1
3483	Ammunition, except for small arms, n.e.c. -----	41.5	2 542.0	3 983.2	39.2	3 828.3	32.2	3 337.8
3484	Small arms -----	13.3	754.9	1 093.1	4.8	443.6	3.6	336.2
3489	Ordnance and accessories, n.e.c. -----	23.9	1 425.4	1 678.1	23.7	1 674.8	23.0	1 632.0
3491	Industrial valves -----	46.2	2 793.2	4 595.7	2.5	224.5	1.1	105.8
3492	Fluid power valves and hose fittings -----	27.9	1 445.4	2 451.5	4.7	461.7	2.1	231.6
3494	Valves and pipe fittings, n.e.c. -----	25.1	1 366.5	2 377.3	1.2	101.1	0.1	9.5
3499	Fabricated metal products, n.e.c. -----	72.5	3 380.9	6 148.6	4.8	370.0	1.9	131.3
35	Industrial machinery and equipment -----	781.7	56 677.5	103 321.3	77.1	8 492.2	32.2	4 086.2
3511	Turbines and turbine generator sets -----	22.9	1 973.7	3 447.8	5.5	867.7	5.0	808.2
3519	Internal combustion engines, n.e.c. -----	64.0	5 065.8	11 122.6	3.8	640.7	2.3	382.2
3541	Machine tools, metal cutting types -----	31.7	1 668.7	3 189.5	0.8	58.6	0.4	30.7
3561	Pumps and pumping equipment -----	35.2	2 154.5	3 998.3	3.1	281.5	0.5	45.0
3563	Air and gas compressors -----	23.8	1 415.1	3 050.9	1.1	90.9	0.7	58.2
3569	General industrial machinery, n.e.c. -----	40.6	2 236.0	3 840.4	1.7	140.1	0.7	59.6
3571	Electronic computers -----	151.9	18 322.2	33 626.5	16.6	2 195.2	8.0	1 027.5
3572	Computer storage devices -----	43.3	3 268.5	6 394.8	1.2	127.3	0.8	74.6
3575	Computer terminals -----	15.0	1 014.3	1 799.0	3.0	319.8	1.2	124.9
3577	Computer peripheral equipment, n.e.c. -----	76.2	6 918.1	13 965.5	4.0	794.8	2.2	427.2
3579	Office machines, n.e.c. -----	28.5	1 869.8	3 297.2	1.8	274.9	1.4	232.7
3593	Fluid power cylinders and actuators -----	20.2	1 254.5	1 896.6	9.4	1 001.1	1.8	203.7
3599	Industrial machinery, n.e.c. -----	228.4	9 516.3	13 692.2	25.1	1 699.6	7.2	611.7
36	Electronic and other electric equipment -----	1 086.0	67 179.2	113 024.8	168.8	14 029.1	76.8	7 037.1
3613	Switchgear and switchboard apparatus -----	44.4	2 888.7	4 907.3	1.5	86.5	0.3	16.3
3621	Motors and generators -----	74.6	3 815.2	6 753.1	5.5	455.4	1.9	193.5
3625	Relays and industrial controls -----	66.6	3 781.2	6 100.5	1.2	101.2	0.3	27.4
3661	Telephone and telegraph apparatus -----	112.3	9 588.0	17 582.5	5.2	453.2	4.0	337.9
3663	Radio and television communications equipment -----	126.0	9 060.8	14 228.6	48.3	5 102.1	35.8	3 741.6
3669	Communications equipment, n.e.c. -----	21.9	1 316.7	2 189.6	0.2	16.8	0.1	10.7
3672	Printed circuit boards -----	66.6	2 683.1	4 672.6	8.1	476.6	0.6	39.0
3674	Semiconductors and related devices -----	184.6	13 429.3	19 794.9	28.3	2 110.1	1.6	115.9
3675	Electronic capacitors -----	21.7	892.0	1 440.1	2.3	114.3	0.2	11.8
3676	Electronic resistors -----	15.7	602.1	882.7	0.7	42.8	(A)	2.4
3677	Electronic coils and transformers -----	23.9	747.9	1 228.4	1.5	72.1	(A)	1.5
3678	Electronic connectors -----	43.8	2 564.8	4 065.0	5.7	441.3	1.5	126.5
3679	Electronic components, n.e.c. -----	162.6	8 383.2	15 438.5	31.4	2 276.7	9.6	814.6
3691	Storage batteries -----	24.2	1 705.1	3 303.1	0.9	80.6	0.3	34.4
3692	Primary batteries, dry and wet -----	10.7	1 132.0	1 877.8	2.0	142.1	0.8	55.0
3695	Magnetic and optical recording media -----	25.6	1 687.2	3 504.0	1.6	232.8	0.5	74.0
3699	Electrical equipment and supplies, n.e.c. -----	60.3	2 901.9	5 056.1	24.4	1 824.5	19.2	1 434.6
37	Transportation equipment -----	1 685.0	130 881.2	317 964.6	694.8	81 173.9	590.0	70 214.1
3711	Motor vehicles and car bodies -----	284.4	36 117.7	133 345.6	3.3	811.5	3.1	759.6
3713	Truck and bus bodies -----	37.8	1 978.4	4 588.7	3.1	511.4	2.5	453.5
3714	Motor vehicle parts and accessories -----	389.1	26 425.7	62 007.3	16.1	1 798.3	12.9	1 472.9
3715	Truck trailers -----	27.5	1 130.8	3 433.5	1.5	108.7	1.0	71.0
3721	Aircraft -----	268.2	17 311.0	39 092.7	175.1	22 493.1	167.1	21 486.5
3724	Aircraft engines and engine parts -----	139.6	11 700.4	20 262.1	72.1	10 216.5	52.9	8 182.7
3728	Aircraft parts and equipment, n.e.c. -----	187.7	11 778.7	17 923.4	10.1	1 013.0	63.2	6 287.2
3731	Ship building and repairing -----	120.2	25 212.7	38 504.4	105.7	7 379.6	102.8	7 192.6
3761	Guided missiles and space vehicles -----	166.7	15 072.7	21 565.8	150.6	20 232.1	142.7	19 224.8
3764	Space propulsion units and parts -----	31.8	2 314.2	3 537.1	29.5	3 270.7	23.3	2 590.9
3769	Space vehicle equipment, n.e.c. -----	15.1	869.9	1 182.2	12.7	965.0	5.8	426.1
3795	Tanks and tank components -----	16.4	969.0	2 521.8	15.0	2 374.0	12.7	2 066.3
38	Instruments and related products -----	868.1	63 570.1	96 055.0	363.8	36 261.2	263.3	26 720.4
3812	Search and navigation equipment -----	369.4	24 738.7	36 266.8	313.5	31 104.9	233.2	23 727.1
3821	Laboratory apparatus and furniture -----	17.1	1 142.4	1 769.3	1.0	119.4	0.7	97.6
3823	Process control instruments -----	53.4	3 205.2	4 788.9	3.3	283.9	1.3	114.8
3824	Fluid meters and counting devices -----	10.1	566.5	938.6	(D)	(D)	(A)	1.1
3825	Instruments to measure electricity -----	85.2	5 090.9	7 703.3	20.4	1 806.0	12.5	1 068.2
3826	Analytical instruments -----	31.2	2 107.1	3 468.2	2.6	254.9	1.6	167.9
3827	Optical instruments and lenses -----	20.1	1 167.8	1 863.6	4.4	450.1	2.6	283.2
3829	Measuring and controlling devices, n.e.c. -----	41.0	2 259.0	3 442.0	(D)	(D)	2.1	171.3
3842	Surgical appliances and supplies -----	78.5	5 443.7	8 532.5	6.1	520.1	4.2	383.5
3844	X-ray apparatus and tubes -----	8.7	834.5	1 554.3	1.2	181.0	0.5	103.9
3845	Electromedical equipment -----	29.2	2 368.8	3 576.7	1.3	169.4	1.1	142.1
3851	Ophthalmic goods -----	24.4	1 152.9	1 689.4	0.3	22.9	(A)	3.6
3861	Photographic equipment and supplies -----	88.0	12 908.0	19 240.5	(D)	(D)	3.4	456.1
3873	Watches, clocks, watchcases, and parts -----	11.8	584.6	1 220.9	(A)	1.6	-	-

Industry and Agency: 1987

Government shipments—Con.										Standard error of estimate (percent) for total Government shipments¹	SIC code
Subcontracts		To DOD		To NASA		To DOE		To other agencies			
Employees	Value of shipments	Employees	Value of shipments	Employees	Value of shipments	Employees	Value of shipments	Employees	Value of shipments		
383.6	35 434.6	1 227.8	135 432.0	41.5	4 303.7	25.3	1 760.3	141.4	13 650.7	2	1987
2.2	161.3	9.7	628.7	0.1	34.7	(A)	0.9	0.2	35.7	11	28
0.1	17.8	(A)	4.4	0.1	33.9	-	-	0.1	21.2	4	2813
2.1	143.5	9.7	624.3	(A)	0.8	(A)	0.9	0.1	14.5	12	2892
0.3	413.8	2.9	4 185.8	-	(A)	-	0.1	0.1	93.5	43	29
0.3	413.8	2.9	4 185.8	-	(A)	-	0.1	0.1	93.5	43	2911
1.0	74.7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	4	30
0.1	12.4	0.6	47.7	(D)	(D)	(D)	(D)	(D)	(D)	4	3011
0.2	19.2	(D)	(D)	-	(A)	-	-	(D)	(D)	25	3052
0.7	43.1	1.3	147.4	-	(A)	-	(A)	0.5	30.3	4	3061
5.6	355.9	3.6	239.3	(D)	(D)	(D)	(D)	(D)	(D)	5	33
(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	3357
(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	3363
3.7	212.6	2.3	138.3	(A)	0.3	-	-	1.4	74.5	7	3365
32.1	2 530.3	84.1	7 681.3	0.4	26.6	16.5	1 145.2	8.7	697.0	2	34
2.9	183.3	10.7	870.0	-	(A)	(A)	2.7	1.1	88.8	12	3441
7.8	550.6	6.3	430.4	(A)	0.4	0.3	27.8	1.3	99.7	16	3443
2.1	166.1	1.3	98.4	(A)	1.1	(A)	0.8	1.8	146.9	13	3452
2.3	301.5	2.1	283.4	-	0.1	(A)	0.1	0.2	18.4	7	3463
0.1	9.0	3.7	375.7	(D)	(D)	-	-	(D)	(D)	-	3482
7.0	490.5	37.9	3 712.8	0.2	16.6	0.1	11.4	1.0	87.5	-	3483
1.2	107.4	4.7	440.5	-	-	(A)	0.2	0.1	2.9	8	3484
0.7	42.8	7.6	567.7	(A)	0.1	16.0	1 098.2	0.1	8.8	-	3489
1.4	118.7	1.9	191.1	(A)	2.6	-	0.2	0.6	30.6	5	3491
2.6	230.1	3.7	382.5	(A)	0.9	-	(A)	1.0	78.3	15	3492
1.1	91.6	0.5	45.6	-	0.1	0.1	3.7	0.6	51.7	18	3494
2.9	238.7	3.7	283.2	-	0.1	-	(A)	1.1	86.7	21	3499
44.9	4 406.0	52.8	6 153.4	1.2	175.7	0.4	56.3	22.7	2 106.8	6	35
0.5	59.5	5.1	831.8	(D)	(D)	(D)	(D)	(D)	(D)	6	3511
1.5	258.5	3.7	624.5	(A)	2.2	-	0.4	0.1	13.6	5	3519
0.4	27.9	0.5	36.0	(D)	(D)	(D)	(D)	(D)	(D)	19	3541
2.6	236.5	2.6	235.4	(A)	0.7	(A)	0.2	0.5	45.2	14	3561
0.4	32.7	0.9	80.1	(A)	0.1	(A)	3.1	0.2	7.6	13	3563
1.0	80.5	1.1	90.5	(A)	0.2	-	(A)	0.6	49.4	9	3569
8.6	1 167.7	13.0	1 493.8	0.5	82.5	0.1	11.6	3.0	607.3	3	3571
0.4	52.7	0.3	38.7	(A)	1.5	(A)	0.4	0.9	86.7	2	3572
1.8	194.9	3.0	309.2	-	-	-	-	-	10.6	75	3575
1.8	367.6	2.5	473.0	(D)	(D)	(D)	(D)	(D)	(D)	7	3577
0.4	42.2	0.3	64.5	(A)	15.1	(A)	15.2	1.4	180.1	8	3579
7.6	797.4	8.9	945.4	(D)	(D)	(D)	(D)	(D)	(D)	14	3593
17.9	1 087.9	10.9	930.5	0.1	7.1	(A)	0.4	14.1	761.6	21	3599
92.1	6 992.0	121.3	10 251.9	2.8	272.9	4.6	254.0	40.1	3 250.3	8	36
1.2	70.2	1.2	56.7	(A)	0.9	(A)	0.8	0.3	28.1	12	3613
3.6	261.9	4.8	406.2	(D)	(D)	(A)	0.4	(D)	(D)	6	3621
0.9	73.8	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	41	3625
1.2	115.3	(D)	(D)	(D)	(D)	(A)	4.2	1.4	152.0	6	3661
12.5	1 360.5	34.2	3 628.8	2.0	201.4	0.1	7.1	12.0	1 264.8	11	36
0.1	6.1	0.2	9.2	-	-	-	-	-	7.6	-	3669
7.5	437.6	7.2	412.8	0.1	7.0	0.1	8.4	0.7	48.4	26	3672
26.7	1 994.2	16.4	1 368.1	0.3	19.2	0.8	55.5	10.8	667.3	9	3674
2.1	102.5	0.3	17.6	-	-	-	-	2.0	96.7	5	3675
0.7	40.4	0.4	29.6	-	(A)	-	-	0.3	13.2	23	3676
1.5	70.6	0.5	29.8	-	-	(A)	0.3	1.0	42.0	26	3677
4.2	314.8	3.3	226.3	(A)	0.4	(A)	0.1	2.4	214.5	17	3678
21.8	1 462.1	21.3	1 615.3	0.1	24.1	3.3	155.6	6.7	481.7	19	3679
0.6	46.2	0.5	50.5	(A)	1.9	-	-	0.4	28.2	13	3691
1.2	87.1	1.8	127.4	-	-	(D)	(D)	(D)	(D)	7	3692
1.1	158.8	1.2	170.4	(A)	2.1	0.1	16.5	0.3	43.8	42	3695
5.2	389.9	23.6	1 746.3	(D)	(D)	(D)	(D)	(D)	(D)	44	3699
104.8	10 959.8	626.3	73 884.7	33.4	3 429.8	2.8	227.0	32.3	3 632.4	1	37
0.2	51.9	2.9	678.2	(D)	(D)	(D)	(D)	0.4	132.9	1	3711
0.6	57.9	0.2	22.1	-	-	(A)	0.4	2.9	488.9	41	3713
3.2	325.4	14.6	1 653.0	-	-	-	-	1.5	145.3	8	3714
0.5	37.7	1.3	95.1	-	-	-	-	0.2	13.6	53	3715
8.0	1 006.6	172.5	22 127.5	1.0	135.8	(D)	(D)	(D)	(D)	-	3721
19.2	2 033.8	66.4	9 708.0	(D)	(D)	(D)	(D)	(D)	(D)	4	3724
46.9	4 725.8	106.3	10 742.9	0.4	38.3	0.3	26.1	3.1	205.7	3	3728
2.9	187.0	95.7	6 721.5	-	0.1	1.3	81.9	8.7	576.1	6	3731
7.9	1 007.3	125.8	17 013.9	13.5	1 622.3	(D)	(D)	(D)	(D)	-	3761
6.2	679.8	18.7	2 215.5	(D)	(D)	(D)	(D)	(D)	(D)	2	3764
6.9	538.9	6.9	533.0	5.4	404.9	0.3	20.7	0.1	6.4	7	3769
2.3	307.7	15.0	2 374.0	-	-	-	-	-	-	-	3795
100.6	9 540.8	325.1	32 204.5	3.5	361.3	0.8	62.4	34.4	3 633.0	1	38
80.3	7 377.8	290.3	28 936.4	2.2	219.6	0.3	23.1	20.7	1 925.8	-	3812
0.3	21.8	0.2	22.1	-	0.1	-	(A)	0.8	97.2	23	3821
2.0	169.1	1.7	145.6	0.4	39.6	0.1	3.9	1.1	94.8	40	3823
(D)	(D)	(A)	0.7	-	-	-	-	(D)	(D)	(X)	3824
7.9	737.8	15.3	1 395.3	0.1	9.1	0.1	9.3	4.9	392.3	8	3825
1.0	87.0	0.8	76.0	0.2	11.8	0.1	8.8	1.5	158.3	13	3826
1.8	166.9	3.2	309.0	0.3	51.9	0.1	6.8	0.8	82.4	8	3827
(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	3829
1.9	136.6	4.0	346.7	0.2	14.3	-	(A)	1.9	159.1	12	3842
0.7	77.1	0.7	118.5	(A)	2.5	0.1	5.5	0.4	54.5	27	3844
0.2	27.3	0.5	74.0	(A)	0.4	-	0.5	0.8	94.5	6	3845
0.3	19.3	(A)	3.3	-	-	(A)	0.3	0.3	19.3	9	3851
(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	3861
(A)	1.6	-	-	-	-	-	-	(A)	1.6	25	3873

Table 1. Employment, Value Added, Value of Shipments, and Government Shipments, by

[Employment in thousands; value in million dollars]

SIC code	Industry	Employees	Value added by manufacture	Total value of shipments and receipts	Government shipments			
					Total		Prime contracts	
					Employees	Value of shipments	Employees	Value of shipments
	1972 SIC BASIS							
	All Industries	5 551.3	394 063.9	877 820.6	1 465.8	159 200.9	1 061.3	121 136.0
28	Chemicals and allied products	94.1	9 860.4	16 947.2	39.8	3 579.9	36.2	3 180.8
2813	Industrial gases	8.1	1 572.5	2 617.8	.2	58.5	.1	40.8
2819	Industrial inorganic chemicals, n.e.c.	72.2	7 529.5	13 211.6	29.8	2 880.9	28.4	2 643.0
2892	Explosives	13.8	758.4	1 117.8	9.8	640.5	7.7	497.0
29	Petroleum and coal products	83.7	16 850.8	126 983.2	3.1	4 353.3	2.7	3 909.3
2911	Petroleum refining	83.7	16 850.8	126 983.2	3.1	4 353.3	2.7	3 909.3
30	Rubber and miscellaneous plastics products	189.8	11 483.9	21 702.6	5.9	508.5	3.4	337.6
3011	Tires and inner tubes	65.4	5 559.4	10 427.4	.4	39.3	.3	29.6
3041	Rubber and plastics hose and belting	23.2	1 240.8	2 268.2	.6	43.0	.3	22.6
3069	Fabricated rubber products, n.e.c.	101.2	4 683.7	9 007.0	4.9	426.2	2.8	285.4
33	Primary metal industries	119.4	6 540.6	15 179.7	5.5	373.3	.5	43.4
3339	Primary nonferrous metals, n.e.c.	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3357	Nonferrous wire drawing and insulating	(D)	(D)	(D)	(D)	(D)	(D)	(D)
3361	Aluminum foundries	54.5	2 311.1	4 353.2	4.0	220.8	(A)	1.9
34	Fabricated metal products	476.5	20 604.2	44 990.2	110.8	9 580.6	79.1	7 081.4
3441	Fabricated structural metal	80.9	3 616.4	8 666.7	12.4	974.2	9.9	837.3
3443	Fabricated plate work (boiler shops)	74.6	3 467.4	6 795.4	9.0	644.2	.8	64.5
3452	Bolts, nuts, rivets, and washers	52.0	2 995.8	5 084.0	2.8	213.2	.9	69.4
3463	Nonferrous forgings	7.3	428.2	1 003.7	2.3	302.0	(A)	.5
3482	Small arms ammunition	9.0	626.7	889.2	4.2	453.7	4.1	446.1
3483	Ammunition, except for small arms, n.e.c.	41.5	2 542.0	3 983.2	39.0	3 796.2	32.5	3 336.9
3484	Small arms	13.3	754.9	1 093.1	4.8	443.6	3.6	336.2
3489	Ordnance and accessories, n.e.c.	23.9	1 425.4	1 678.1	23.9	1 658.8	22.1	1 522.6
3494	Valves and pipe fittings	101.5	1 366.5	9 648.2	7.4	728.0	2.6	285.1
3499	Fabricated metal products, n.e.c.	72.5	3 380.9	6 148.6	5.0	366.7	2.6	182.8
35	Machinery, except electrical	937.7	66 974.9	124 940.3	89.5	9 795.3	35.1	4 559.6
3511	Turbines and turbine generator sets	22.9	1 973.7	3 447.8	3.4	491.6	2.7	385.5
3519	Internal combustion engines, n.e.c.	64.0	5 065.8	11 122.6	4.7	725.0	2.3	375.7
3531	Construction machinery	81.2	5 775.2	12 772.7	2.9	381.3	1.4	190.0
3537	Industrial trucks and tractors	21.6	1 044.1	2 664.5	.8	79.2	.5	56.6
3541	Machine tools, metal cutting types	31.7	1 668.7	3 189.5	1.3	85.3	.4	27.2
3561	Pumps and pumping equipment	49.5	2 963.1	5 365.5	6.0	583.4	2.0	192.8
3563	Air and gas compressors	23.8	1 415.1	3 050.9	1.1	95.1	.7	60.5
3569	General industrial machinery, n.e.c.	55.3	3 146.8	5 253.7	2.5	195.3	1.1	90.1
3573	Electronic computing equipment	310.7	31 287.3	59 195.4	24.7	3 457.4	12.7	1 740.8
3579	Office machines, n.e.c., and typewriters	28.5	1 869.8	3 297.2	1.8	256.9	1.3	206.3
3599	Machinery, except electrical, n.e.c.	248.5	10 765.3	15 580.5	40.3	3 444.8	10.0	1 234.1
36	Electric and electronic equipment	1 487.7	94 284.8	152 985.8	473.6	44 810.9	302.3	30 247.7
3613	Switchgear and switchboard apparatus	50.8	3 249.9	5 425.4	1.3	102.8	.4	23.3
3621	Motors and generators	74.6	3 815.2	6 753.1	5.4	409.7	1.9	195.6
3622	Industrial controls	52.5	3 127.4	5 149.8	(D)	(D)	.2	18.1
3661	Telephone and telegraph apparatus	104.8	8 823.3	16 101.2	3.2	304.2	2.4	224.5
3662	Radio and TV communication equipment	544.5	36 432.3	55 00 9.4	367.4	36 601.0	276.2	27 925.8
3671	Electron tubes, all types	25.8	1 389.0	2 542.8	10.1	904.4	5.5	509.7
3674	Semiconductors and related devices	184.6	13 429.3	19 794.9	28.2	2 212.1	2.0	166.4
3675	Electronic capacitors	21.7	892.0	1 440.1	2.7	147.7	.2	13.1
3676	Electronic resistors	15.7	602.1	882.7	1.0	60.6	(A)	2.9
3677	Electronic coils and transformers	23.9	747.9	1 228.4	1.4	70.4	.1	5.6
3678	Electronic connectors	43.8	2 564.8	4 065.0	5.3	421.2	1.5	125.4
3679	Electronic components, n.e.c.	250.3	12 280.2	22 502.5	41.6	2 931.1	9.4	698.5
3691	Storage batteries	24.2	1 705.1	3 303.1	.7	70.7	.2	29.0
3692	Primary batteries, dry and wet	10.4	1 132.0	1 877.8	(D)	(D)	.8	62.0
3693	X-ray and electromedical apparatus	37.9	3 203.4	5 131.0	2.5	342.4	1.5	247.8
3699	Electrical equipment and supplies, n.e.c. --	22.2	890.9	1 778.6	.3	28.5	-	-
37	Transportation equipment	1 684.9	130 881.2	31 7 964.6	680.2	80 558.7	571.6	68 763.8
3711	Motor vehicles and car bodies	284.4	36 117.7	133 345.6	(D)	(D)	(D)	(D)
3713	Truck and bus bodies	37.8	1 978.4	4 588.7	2.7	455.9	2.1	401.4
3714	Motor vehicle parts and accessories	389.1	26 425.7	62 007.3	12.3	1 401.7	10.3	1 167.5
3715	Truck trailers	27.5	1 130.8	3 433.5	1.7	123.6	1.1	81.5
3721	Aircraft	268.2	17 311.0	39 092.7	174.6	22 621.6	165.1	21 493.9
3724	Aircraft engines and engine parts	140.0	11 700.4	20 262.1	73.0	10 366.8	55.9	8 554.5
3728	Aircraft equipment, n.e.c.	117.7	11 778.7	17 923.4	98.8	10 351.1	44.0	4 538.6
3731	Ship building and repairing	120.2	25 212.7	38 504.4	104.7	7 368.4	101.8	7 179.7
3761	Guided missiles and space vehicles	166.7	15 072.7	21 565.8	151.3	20 315.1	141.7	19 102.5
3764	Space propulsion units and parts	31.8	2 314.2	3 537.1	30.1	3 365.9	22.8	2 523.2
3769	Space vehicle equipment, n.e.c.	15.1	869.9	1 182.2	(D)	(D)	(D)	(D)
3795	Tanks and tank components	16.4	969.0	2 521.8	14.4	2 328.7	12.2	2 028.3
38	Instruments and related products	477.5	36 583.1	56 127.0	57.4	5 640.4	30.4	3 012.4
3811	Engineering and scientific instruments	42.0	2 590.0	3 973.3	12.2	1 026.7	4.4	442.1
3823	Process control instruments	53.4	3 205.2	4 788.9	2.0	170.0	.8	68.0
3824	Fluid meters and counting devices	10.1	566.5	938.6	.1	11.2	(A)	2.0
3825	Instruments to measure electricity	85.2	5 090.9	7 703.3	16.2	1 533.8	9.1	848.7
3829	Measuring and controlling devices, n.e.c.	33.0	1 774.6	2 720.7	(D)	(D)	2.2	176.6
3832	Optical instruments and lenses	51.1	3 266.7	5 318.9	9.8	971.5	5.8	598.9
3842	Surgical appliances and supplies	78.5	5 443.7	8 532.5	6.7	555.9	4.7	415.2
3851	Ophthalmic goods	24.4	1 152.9	1 689.4	.2	21.9	(A)	3.2
3861	Photographic equipment and supplies	88.0	12 908.0	19 240.5	(D)	(D)	3.3	443.1
3873	Watches, clocks, and watchcases	11.8	584.6	1 220.9	(A)	15.5	(A)	14.6

Note: Totals may not add to sum of the detail due to unadjusted rounding.

¹Standard error estimates are calculated from the unadjusted (reciprocal) government shipments which were reported on the MC-9675. No adjustment has been made to the standard error for the ratio estimation to Census of Manufactures levels. See appendix B for a description of the methodology.

²Data in the value of shipments column represent value of work done rather than value of shipments. Consequently, the formula for computing value added by manufacture was modified to exclude any change between beginning- and end-of-year inventories.

Industry and Agency: 1987—Con.

Government shipments—Con.										Standard error of estimate (percent) for total Government shipments ¹	SIC code
Subcontracts		To DOD		To NASA		To DOE		To other agencies			
Employees	Value of shipments	Employees	Value of shipments	Employees	Value of shipments	Employees	Value of shipments	Employees	Value of shipments		
404.6	38 064.9	1 234.7	137 137.7	38.7	4 194.8	49.9	4 108.9	142.5	13 759.5	2	1972
3.6	399.1	9.7	629.7	.1	34.0	29.3	2 809.0	.7	107.2	16	28
.1	17.7	(A)	4.3	.1	33.2	-	-	.1	21.0	4	2813
1.4	237.9	(A)	1.1	-	-	29.3	2 808.1	.5	71.7	19	2819
2.1	143.5	9.7	624.3	(A)	.8	(A)	.9	.1	14.5	12	2892
.4	444.0	3.0	4 251.3	-	(A)	-	.1	.1	101.9	42	29
.4	444.0	3.0	4 251.3	-	(A)	-	.1	.1	101.9	42	2911
2.5	170.9	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	7	30
.1	9.7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	5	3011
.3	20.4	.3	24.9	(A)	.1	-	-	.3	18.0	18	3041
2.1	140.8	3.0	258.9	(D)	(D)	(D)	(D)	1.9	166.9	8	3069
5.0	329.9	3.3	224.0	(D)	(D)	(D)	(D)	(D)	(D)	5	33
(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	3339
(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	3357
4.0	218.9	2.4	131.0	.2	2.6	-	-	1.4	87.2	8	3361
31.7	2 499.2	(D)	(D)	(D)	(D)	(D)	(D)	8.6	666.6	2	34
2.5	136.9	11.3	884.5	-	-	-	-	1.1	89.7	12	3441
8.2	579.7	7.7	544.9	(A)	.5	.4	30.1	.9	68.7	14	3443
1.9	143.8	1.1	84.3	(D)	(D)	(A)	.7	(D)	(D)	15	3452
2.3	301.5	2.1	283.4	-	.1	(A)	.1	.2	18.4	7	3463
.1	7.6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	-	3482
6.5	459.3	37.4	3 648.4	.2	21.2	.1	12.6	1.3	114.0	-	3483
1.2	107.4	4.7	440.5	-	-	(A)	.2	.1	2.9	8	3484
1.8	136.2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	-	3489
4.8	442.9	5.7	601.2	(A)	3.6	(A)	3.3	1.6	119.9	12	3494
2.4	183.9	3.3	243.2	-	-	-	-	1.7	123.5	17	3499
54.4	5 235.7	65.7	7 380.6	1.3	190.1	.5	79.8	22.0	2 144.8	6	35
.7	106.1	3.2	449.5	-	(A)	.2	17.9	-	24.2	15	3511
2.4	349.3	4.5	700.3	(A)	2.2	(A)	.8	.2	21.7	16	3519
1.5	191.3	2.5	343.6	-	-	-	-	.4	37.7	12	3531
.3	22.6	.3	46.3	-	.1	-	-	.5	32.8	9	3537
.9	58.1	.4	31.9	(D)	(D)	(D)	(D)	(D)	(D)	35	3541
4.0	390.6	4.7	474.8	(A)	.7	(A)	.2	1.3	107.7	13	3561
.4	34.6	1.0	83.2	(A)	.1	(A)	3.2	.1	8.6	14	3563
1.4	105.2	1.6	128.7	(D)	(D)	(D)	(D)	(D)	(D)	5	3569
12.0	1 716.6	18.2	2 232.9	.7	136.1	.2	50.2	5.6	1 038.2	8	3573
.5	50.6	.4	43.0	(A)	.9	(A)	1.0	1.4	212.0	7	3579
30.3	2 210.7	28.9	2 846.4	.5	46.6	(A)	2.9	10.9	548.9	16	3599
171.3	14 563.2	399.7	38 448.3	5.0	520.6	4.7	294.8	64.2	5 547.2	6	36
.9	79.5	.8	62.2	(A)	1.1	(A)	.7	.5	38.8	12	3613
3.5	214.1	4.4	352.4	(A)	1.7	-	-	1.0	55.6	7	3621
(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	3622
.8	79.7	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	5	3661
91.2	8 675.2	329.5	32 723.2	4.3	455.4	.2	18.4	33.4	3 404.0	7	3662
4.6	394.7	8.9	797.5	(D)	(D)	(D)	(D)	(D)	(D)	7	3671
26.2	2 045.7	17.6	1 543.2	.2	22.7	.8	54.2	9.6	592.0	14	3674
2.5	134.6	.5	30.2	-	-	-	-	2.2	117.5	3	3675
1.0	57.7	.4	35.6	-	(A)	-	-	.6	25.0	16	3676
1.3	64.8	.6	35.5	-	-	(A)	.3	.8	34.6	27	3677
3.8	295.8	2.7	203.6	(A)	.4	-	(A)	2.6	217.2	18	3678
32.2	2 232.6	28.3	2 069.3	.3	24.5	3.2	186.1	9.8	651.2	7	3679
.5	41.7	.4	41.1	-	-	-	-	.3	29.6	14	3691
(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	3692
1.0	94.6	1.3	186.4	(A)	3.2	.1	4.9	1.1	147.9	16	3693
.3	28.5	-	-	-	-	-	-	.3	28.5	45	3699
108.6	11 794.9	616.8	73 790.4	30.2	3 254.8	2.5	206.3	30.7	3 307.2	1	37
.1	48.4	(D)	(D)	(D)	(A)	(A)	.4	.3	119.8	(X)	3711
.6	54.5	.1	19.6	-	-	(A)	.4	2.6	435.9	40	3713
2.0	234.2	10.8	1 255.8	-	-	-	-	1.5	145.9	5	3714
.6	42.1	1.5	109.1	-	-	-	-	.2	14.5	52	3715
9.5	1 127.7	172.3	22 289.1	(D)	(D)	(D)	(D)	(D)	(D)	-	3721
17.1	1 812.3	67.6	9 884.5	(D)	(D)	(D)	(D)	(D)	(D)	3	3724
54.8	5 812.5	94.6	10 044.6	.4	50.2	.3	36.3	3.5	220.0	5	3728
2.9	188.7	94.6	6 704.5	-	.1	1.3	82.6	8.8	581.2	6	3731
9.6	1 212.6	130.7	17 613.1	12.9	1 564.2	(A)	1.6	7.7	1 136.2	-	3761
7.3	842.7	18.9	2 161.9	10.5	1 138.3	(D)	(D)	(D)	(D)	-	3764
1.9	118.8	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	3769
2.2	300.4	14.4	2 328.2	-	-	-	-	-	.5	1	3795
27.1	2 628.0	43.5	3 890.9	1.6	161.7	.3	29.3	12.0	1 558.5	4	38
7.8	584.6	11.2	918.5	(A)	2.5	(A)	.3	1.0	105.4	12	3811
1.2	102.0	1.2	99.1	.1	(D)	(A)	1.3	.7	62.1	14	3823
.1	9.2	(A)	2.8	-	(A)	(A)	.2	.1	8.2	13	3824
7.1	685.1	12.8	1 226.1	.5	42.7	(A)	2.0	2.9	263.0	10	3825
(D)	(D)	(D)	(D)	(D)	7.5	(D)	(D)	(D)	(D)	(X)	3829
4.0	372.6	5.2	516.0	.7	87.0	.2	14.1	3.7	354.4	11	3832
2.0	140.7	4.5	372.3	.2	14.2	-	(A)	2.0	169.4	10	3842
.2	18.7	(A)	2.9	-	-	(A)	.3	.2	18.7	8	3851
(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(X)	3861
(A)	.9	-	-	-	-	-	-	(A)	15.5	43	3873

Table 2. Value of Prime and Subcontract Shipments to the Government by Industry and

[Million dollars]

SIC code	Industry	Total value of shipments and receipts	Government shipments				
			Total	Prime contracts	Subcontracts	To DOD	
						Prime contracts	Subcontracts
	1987 SIC BASIS						
	All industries -----	828 909.7	155 146.7	119 712.1	35 434.6	108 350.1	27 081.9
28	Chemicals and allied products -----	3 735.6	700.0	538.7	161.3	496.0	132.7
2813	Industrial gases -----	2 617.8	59.5	41.7	17.8	4.4	-
2892	Explosives -----	1 117.8	640.5	497.0	143.5	491.6	132.7
29	Petroleum and coal products -----	118 216.1	4 279.4	3 865.6	413.8	3 864.9	320.9
2911	Petroleum refining -----	118 216.1	4 279.4	3 865.6	413.8	3 864.9	320.9
30	Rubber and miscellaneous plastics products -----	16 658.8	261.5	186.8	74.7	178.1	(D)
3011	Tires and inner tubes -----	10 427.4	57.4	45.0	12.4	43.0	4.7
3052	Rubber and plastics hose and belting -----	2 268.2	26.4	7.2	19.2	7.2	(D)
3061	Mechanical rubber goods -----	3 963.2	177.7	134.6	43.1	127.9	19.5
33	Primary metal industries -----	15 167.0	399.3	43.4	355.9	38.3	201.0
3357	Nonferrous wiredrawing and insulating -----	(D)	(D)	(D)	(D)	(D)	(D)
3363	Aluminum die-castings -----	(D)	(D)	(D)	(D)	(D)	(D)
3365	Aluminum foundries -----	1 871.7	213.1	.5	212.6	.2	138.1
34	Fabricated metal products -----	44 766.5	9 550.1	7 019.8	2 530.3	5 794.4	1 886.9
3441	Fabricated structural metal -----	8 666.7	961.5	778.2	183.3	777.7	92.3
3443	Fabricated plate work (boiler shops) -----	6 795.4	558.3	7.7	550.6	2.8	427.6
3452	Bolts, nuts, rivets, and washers -----	5 084.0	247.2	81.1	166.1	67.8	30.6
3463	Nonferrous forgings -----	1 003.7	302.0	.5	301.5	.5	282.9
3482	Small arms ammunition -----	889.2	377.1	368.1	9.0	368.4	(D)
3483	Ammunition, except for small arms, n.e.c. -----	3 983.2	3 828.3	3 337.8	490.5	3 286.7	426.1
3484	Small arms -----	1 093.1	443.6	336.2	107.4	335.9	104.6
3489	Ordnance and accessories, n.e.c. -----	1 678.1	1 674.8	1 632.0	42.8	524.9	(D)
3491	Industrial valves -----	4 595.7	224.5	105.8	118.7	102.3	88.8
3492	Fluid power valves and hose fittings -----	2 451.5	461.7	231.6	230.1	194.5	188.0
3494	Valves and pipe fittings, n.e.c. -----	2 377.3	101.1	9.5	91.6	9.4	36.2
3499	Fabricated metal products, n.e.c. -----	6 148.6	370.0	131.3	238.7	123.5	159.7
35	Industrial machinery and equipment -----	103 321.3	8 492.2	4 086.2	4 406.0	3 356.7	2 796.7
3511	Turbines and turbine generator sets -----	3 447.8	867.7	808.2	59.5	793.2	(D)
3519	Internal combustion engines, n.e.c. -----	11 122.6	640.7	382.2	258.5	375.1	249.4
3541	Machine tools, metal cutting types -----	3 189.5	58.6	30.7	27.9	25.6	10.4
3561	Pumps and pumping equipment -----	3 998.3	281.5	45.0	236.5	38.8	196.6
3563	Air and gas compressors -----	3 050.9	90.9	58.2	32.7	56.6	23.5
3569	General industrial machinery, n.e.c. -----	3 840.4	140.1	59.6	80.5	57.3	33.2
3571	Electronic computers -----	33 626.5	2 195.2	1 027.5	1 167.7	763.2	730.6
3572	Computer storage devices -----	6 394.8	127.3	74.6	52.7	34.5	4.2
3575	Computer terminals -----	1 799.0	319.8	124.9	194.9	123.4	185.8
3577	Computer peripheral equipment, n.e.c. -----	13 965.5	794.8	427.2	367.6	243.2	229.8
3579	Office machines, n.e.c. -----	3 297.2	274.9	232.7	42.2	44.0	20.5
3593	Fluid power cylinders and actuators -----	1 896.6	1 001.1	203.7	797.4	200.4	745.0
3599	Industrial machinery, n.e.c. -----	13 692.2	1 699.6	611.7	1 087.9	601.4	329.1
36	Electronic and other electric equipment -----	113 024.8	14 029.1	7 037.1	6 992.0	5 784.8	4 467.1
3613	Switchgear and switchboard apparatus -----	4 907.3	86.5	16.3	70.2	15.5	41.2
3621	Motors and generators -----	6 753.1	455.4	193.5	261.9	190.1	216.1
3625	Relays and industrial controls -----	6 100.5	101.2	27.4	73.8	21.2	(D)
3661	Telephone and telegraph apparatus -----	17 582.5	453.2	337.9	115.3	250.7	(D)
3663	Radio and television communications equipment -----	14 228.6	5 102.1	3 741.6	1 360.5	2 912.5	716.3
3669	Communications equipment, n.e.c. -----	2 189.6	16.8	10.7	6.1	3.1	6.1
3672	Printed circuit boards -----	4 672.6	476.6	39.0	437.6	29.5	383.3
3674	Semiconductors and related devices -----	19 794.9	2 110.1	115.9	1 994.2	107.5	1 260.6
3675	Electronic capacitors -----	1 440.1	114.3	11.8	102.5	11.6	6.0
3676	Electronic resistors -----	882.7	42.8	2.4	40.4	2.2	27.4
3677	Electronic coils and transformers -----	1 228.4	72.1	1.5	70.6	1.3	28.5
3678	Electronic connectors -----	4 065.0	441.3	126.5	314.8	122.9	103.4
3679	Electronic components, n.e.c. -----	15 438.5	2 276.7	814.6	1 462.1	567.4	1 047.9
3691	Storage batteries -----	3 303.1	80.6	34.4	46.2	32.4	18.1
3692	Primary batteries, dry and wet -----	1 877.8	142.1	55.0	87.1	50.5	76.9
3695	Magnetic and optical recording media -----	3 504.0	232.8	74.0	158.8	53.9	116.5
3699	Electrical equipment and supplies, n.e.c. -----	5 056.1	1 824.5	1 434.6	389.9	1 412.5	333.8
37	Transportation equipment -----	317 964.6	81 173.9	70 214.1	10 959.8	64 369.3	9 515.4
3711	Motor vehicles and car bodies -----	133 345.6	811.5	759.6	51.9	678.1	.1
3713	Truck and bus bodies -----	4 588.7	511.4	453.5	57.9	17.3	4.8
3714	Motor vehicle parts and accessories -----	62 007.3	1 798.3	1 472.9	325.4	1 467.0	186.0
3715	Truck trailers -----	3 433.5	108.7	71.0	37.7	70.6	24.5
3721	Aircraft -----	39 092.7	22 493.1	21 496.5	1 006.6	21 232.7	894.8
3724	Aircraft engines and engine parts -----	20 262.1	10 216.5	8 182.7	2 033.8	8 016.6	1 691.4
3728	Aircraft parts and equipment, n.e.c. -----	17 923.4	11 013.0	6 287.2	4 725.8	6 210.7	4 532.2
3731	Ship building and repairing -----	28 504.4	7 379.6	7 192.6	187.0	6 619.0	102.5
3761	Guided missiles and space vehicles -----	21 565.8	20 232.1	19 224.8	1 007.3	16 378.2	635.7
3764	Space propulsion units and parts -----	3 537.1	3 270.7	2 590.9	679.8	1 574.7	640.8
3769	Space vehicle equipment, n.e.c. -----	1 182.2	965.0	426.1	538.9	38.1	494.9
3795	Tanks and tank components -----	2 521.8	2 374.0	2 066.3	307.7	2 066.3	307.7
38	Instruments and related products -----	96 055.0	36 261.2	26 720.4	9 540.8	24 487.6	7 736.9
3812	Search and navigation equipment -----	36 266.8	31 104.9	23 727.1	7 377.8	22 248.2	6 688.2
3821	Laboratory apparatus and furniture -----	1 769.3	119.4	97.6	21.8	14.7	7.4
3823	Process control instruments -----	4 788.9	283.9	114.8	169.1	101.7	43.9
3824	Fluid meters and counting devices -----	3 938.6	(D)	1.1	(D)	.7	-
3825	Instruments to measure electricity -----	7 703.3	1 806.0	1 068.2	737.8	886.0	509.3
3826	Analytical instruments -----	3 468.2	254.9	167.9	87.0	56.1	19.9
3827	Optical instruments and lenses -----	1 863.6	450.1	283.2	166.9	176.6	132.4
3829	Measuring and controlling devices, n.e.c. -----	3 442.0	(D)	171.3	(D)	(D)	202.2
3842	Surgical appliances and supplies -----	8 532.5	520.1	383.5	136.6	286.4	60.3
3844	X-ray apparatus and tubes -----	1 554.3	181.0	103.9	77.1	60.3	58.2
3845	Electromedical equipment -----	3 576.7	169.4	142.1	27.3	58.9	15.1
3851	Ophthalmic goods -----	1 689.4	22.9	3.6	19.3	3.3	-
3861	Photographic equipment and supplies -----	19 240.5	(D)	456.1	(D)	(D)	-
3873	Watches, clocks, watchcases, and parts -----	1 220.9	1.6	-	1.6	-	-

Agency: 1987

Government shipments—Con.						Standard error of estimate (percent) for total Government shipments ¹	SIC code
To NASA		To DOE		To other agencies			
Prime contracts	Subcontracts	Prime contracts	Subcontracts	Prime contracts	Subcontracts		
3 427.9	875.7	1 483.6	276.8	6 450.5	7 200.2	2	1987
33.6	1.1	.4	.5	8.7	27.0	11	28
33.6	.3	—	—	3.7	17.5	4	2813
(A)	.8	.4	.5	5.0	9.5	12	2892
—	(A)	—	.1	.7	92.8	43	29
—	(A)	—	.1	.7	92.8	43	291
(D)	(D)	(D)	—	(D)	(D)	4	30
(D)	(D)	(D)	—	(D)	(D)	4	3011
(A)	(A)	—	—	(A)	(D)	25	3052
(A)	—	(A)	—	6.7	23.6	4	3061
(A)	(D)	(D)	14.3	(D)	(D)	5	33
(D)	(D)	(D)	(D)	(D)	(D)	(X)	3357
(D)	(D)	(D)	(D)	(D)	(D)	(X)	3363
—	.3	—	—	.3	74.2	7	3365
21.0	5.6	1 107.2	38.0	97.2	599.8	2	34
—	(A)	.4	2.3	.1	88.7	12	3441
—	.4	4.7	23.1	.2	99.5	16	3443
.8	.3	.2	.6	12.3	134.6	13	3452
—	.1	—	.1	—	18.4	7	3463
(D)	—	—	—	(D)	(D)	—	3482
15.1	1.5	3.3	8.1	32.7	54.8	—	3483
—	—	.2	—	.1	2.8	8	3484
(D)	(A)	1 098.2	—	(D)	(D)	—	3489
.1	2.5	.1	.1	3.3	27.3	5	3491
.3	.6	(A)	(A)	36.8	41.5	15	3492
(A)	(A)	—	3.7	.1	51.7	18	3494
(A)	.1	(A)	(A)	7.8	78.9	21	3499
92.5	83.1	43.2	13.2	593.8	1 513.0	6	35
(D)	(D)	(D)	(D)	(D)	(D)	6	3511
2.2	—	.1	.3	4.8	8.8	5	3519
(D)	—	—	(D)	(D)	(D)	19	3541
—	.7	(A)	.2	6.2	39.0	14	3561
.1	—	—	3.1	1.5	6.1	13	3563
(A)	.2	(A)	(A)	2.3	47.1	9	3569
49.1	33.4	11.0	.6	204.2	403.1	3	3571
1.3	.2	.4	(A)	38.4	48.3	2	3572
—	—	—	—	1.5	9.1	75	3575
24.6	(D)	(D)	2.3	(D)	(D)	7	3577
12.2	2.9	12.3	2.9	164.2	15.9	8	3579
(D)	(D)	—	(D)	(D)	(D)	14	3593
.4	6.7	—	.4	9.9	751.7	21	3599
71.8	201.1	188.9	65.1	991.6	2 258.7	8	36
.6	.3	.1	.7	.1	28.0	12	3613
(D)	1.9	—	.4	(D)	43.5	6	3621
(D)	—	(D)	(D)	(D)	29.1	41	3625
3.5	(D)	2.3	1.9	81.4	70.6	6	3661
—	—	—	—	—	—	—	3663
46.7	154.7	5.4	1.7	777.0	487.8	11	—
—	—	—	—	7.6	—	—	3669
.2	6.8	8.4	(A)	.9	47.5	26	3672
5.4	13.8	—	55.5	3.0	664.3	9	3674
—	—	—	—	.2	96.5	5	3675
(A)	(A)	—	—	.2	13.0	23	3676
—	—	(A)	.3	.2	41.8	26	3677
.2	.2	.1	—	3.3	211.2	17	3678
11.0	13.1	154.1	1.5	82.1	399.6	19	3679
.5	1.4	—	—	1.5	26.7	13	3691
—	—	(D)	(D)	(D)	(D)	7	3692
.3	1.8	16.4	(A)	3.4	40.5	42	3695
(D)	(D)	(D)	(D)	19.6	(D)	44	3699
3 060.0	369.8	111.9	115.1	2 672.9	959.5	1	37
(D)	—	(D)	—	81.1	51.8	1	3711
—	—	.4	—	435.8	53.1	41	3713
—	—	—	—	5.9	139.4	8	3714
—	—	—	—	.4	13.2	53	3715
122.4	13.4	(D)	.1	(D)	98.3	—	3721
(D)	150.0	(D)	(D)	(D)	(D)	4	3724
10.9	27.4	23.3	2.8	42.3	163.4	3	3728
.1	—	—	81.9	573.5	2.6	6	3731
1 487.8	134.5	(D)	1.6	(D)	235.5	—	3761
(D)	25.7	(D)	(D)	(D)	(D)	2	3764
386.1	18.8	—	20.7	1.9	4.5	7	3769
—	—	—	—	—	—	—	3795
148.9	212.3	31.9	30.5	2 072.0	1 561.1	1	38
65.7	153.9	5.7	17.4	1 407.5	518.3	—	3812
(A)	(A)	(A)	(A)	82.9	14.4	23	3821
.5	39.1	1.6	2.3	11.0	83.8	40	3823
—	—	—	—	.4	(D)	(X)	3824
8.3	.8	8.8	.5	165.1	227.2	8	3825
6.1	5.7	8.2	.6	97.5	60.8	13	3826
47.7	4.2	.3	6.5	58.6	23.8	8	3827
(D)	7.7	(D)	1.6	10.7	(D)	(X)	3829
13.6	.7	(A)	—	83.5	75.6	12	3842
2.3	.2	4.1	1.4	37.2	17.3	27	3844
.4	—	.3	.2	82.5	12.0	6	3845
(D)	—	.3	—	—	19.3	9	3851
—	—	(D)	—	35.1	(D)	(X)	3861
—	—	—	—	—	1.6	25	3873

Table 2. Value of Prime and Subcontract Shipments to the Government by Industry and

[Million dollars]

		Government shipments					
SIC code	Industry	Total value of shipments and receipts	Total	Prime contracts	Subcontracts	To DOD	
						Prime contracts	Subcontracts
	1972 SIC BASIS						
	All Industries -----	877 820.6	159 200.9	121 136.0	38 064.9	107 741.8	29 395.9
28	Chemicals and allied products -----	16 947.2	3 579.9	3 180.8	399.1	497.0	132.7
2813	Industrial gases -----	2 617.8	58.5	40.8	17.7	4.3	-
2819	Industrial inorganic chemicals, n.e.c.	13 211.6	2 880.9	2 643.0	237.9	1.1	-
2892	Explosives -----	1 117.8	640.5	497.0	143.5	491.6	132.7
29	Petroleum and coal products -----	126 983.2	4 353.3	3 909.3	444.0	3 908.7	342.6
2911	Petroleum refining -----	126 983.2	4 353.3	3 909.3	444.0	3 908.7	342.6
30	Rubber and miscellaneous plastics products -----	21 702.6	508.5	337.6	170.9	247.4	(D)
3011	Tires and inner tubes -----	10 427.4	39.3	29.6	9.7	28.2	(D)
3041	Rubber and plastics hose and belting -----	2 268.2	43.0	22.6	20.4	22.6	2.3
3069	Fabricated rubber products, n.e.c.	9 007.0	426.2	285.4	140.8	196.6	62.3
33	Primary metal industries -----	15 179.7	373.3	43.4	329.9	38.3	185.7
3339	Primary nonferrous metals, n.e.c.	(D)	(D)	(D)	(D)	(D)	(D)
3357	Nonferrous wire drawing and insulating -----	(D)	(D)	(D)	(D)	(D)	(D)
3361	Aluminum foundries -----	4 353.2	220.8	1.9	218.9	.2	130.8
34	Fabricated metal products -----	44 990.2	9 580.6	7 081.4	2 499.2	6 307.4	(D)
3441	Fabricated structural metal -----	8 666.7	974.2	837.3	136.9	837.3	47.2
3443	Fabricated plate work (boiler shops) -----	6 795.4	644.2	64.5	579.7	59.6	485.3
3452	Bolts, nuts, rivets, and washers -----	5 084.0	213.2	69.4	143.8	58.1	26.2
3463	Nonferrous forgings -----	1 003.7	302.0	.5	301.5	.5	282.9
3482	Small arms ammunition -----	889.2	453.7	446.1	7.6	444.8	(D)
3483	Ammunition, except for small arms, n.e.c.	3 983.2	3 796.2	3 336.9	459.3	3 272.7	375.7
3484	Small arms -----	1 093.1	443.6	336.2	107.4	335.9	104.6
3489	Ordnance and accessories, n.e.c.	1 678.1	1 658.8	1 522.6	136.2	891.0	(D)
3494	Valves and pipe fittings -----	9 648.2	728.0	285.1	442.9	279.1	322.1
3499	Fabricated metal products, n.e.c.	6 148.6	366.7	182.8	183.9	128.4	114.8
35	Machinery, except electrical -----	124 940.3	9 795.3	4 559.6	5 235.7	3 648.1	3 732.5
3511	Turbines and turbine generator sets -----	3 447.8	491.6	385.5	106.1	364.5	85.0
3519	Internal combustion engines, n.e.c.	11 122.6	725.0	375.7	349.3	370.0	330.3
3531	Construction machinery -----	12 772.7	381.3	190.0	191.3	181.1	162.5
3537	Industrial trucks and tractors -----	2 664.5	79.2	56.6	22.6	44.2	2.1
3541	Machine tools, metal cutting types -----	3 189.5	85.3	27.2	58.1	22.7	9.2
3561	Pumps and pumping equipment -----	5 365.5	583.4	192.8	390.6	136.3	338.5
3563	Air and gas compressors -----	3 050.9	95.1	60.5	34.6	58.8	24.4
3569	General industrial machinery, n.e.c.	5 253.7	195.3	90.1	105.2	76.0	52.7
3573	Electronic computing equipment -----	59 195.4	3 457.4	1 740.8	1 716.6	1 153.5	1 079.4
3579	Office machines, n.e.c., and typewriters -----	3 297.2	256.9	206.3	50.6	11.5	31.5
3599	Machinery, except electrical, n.e.c.	15 580.5	3 444.8	1 234.1	2 210.7	1 229.5	1 616.9
36	Electric and electronic equipment -----	152 985.8	44 810.9	30 247.7	14 563.2	27 380.0	11 068.3
3613	Switchgear and switchboard apparatus -----	5 425.4	102.8	23.3	79.5	22.1	40.1
3621	Motors and generators -----	6 753.1	409.7	195.6	214.1	192.4	160.0
3622	Industrial controls -----	5 149.8	(D)	18.1	(D)	(D)	32.4
3661	Telephone and telegraph apparatus -----	16 101.2	304.2	224.5	79.7	(D)	16.9
3662	Radio and TV communication equipment -----	55 009.4	36 601.0	27 925.8	8 675.2	25 535.2	7 188.0
3671	Electron tubes, all types -----	2 542.8	904.4	509.7	394.7	461.5	336.0
3674	Semiconductors and related devices -----	19 794.9	2 212.1	166.4	2 045.7	145.6	1 397.6
3675	Electronic capacitors -----	1 440.1	147.7	13.1	134.6	12.9	17.3
3676	Electronic resistors -----	882.7	60.6	2.9	57.7	2.7	32.9
3677	Electronic coils and transformers -----	1 228.4	70.4	5.6	64.8	5.5	30.0
3678	Electronic connectors -----	4 065.0	421.2	125.4	295.8	122.4	81.2
3679	Electronic components, n.e.c.	22 502.5	2 931.1	698.5	2 232.6	488.0	1 581.3
3691	Storage batteries -----	3 303.1	70.7	29.0	41.7	27.5	13.6
3692	Primary batteries, dry and wet -----	1 877.8	(D)	62.0	(D)	53.8	(D)
3693	X-ray and electromedical apparatus -----	5 131.0	342.4	247.8	94.6	119.7	66.7
3699	Electrical equipment and supplies, n.e.c.	1 778.6	28.5	-	28.5	-	-
37	Transportation equipment -----	317 964.6	80 558.7	68 763.8	11 794.9	63 371.7	10 418.7
3711	Motor vehicles and car bodies -----	133 345.6	(D)	(D)	48.4	(D)	-
3713	Truck and bus bodies -----	4 588.7	455.9	401.4	54.5	15.3	4.3
3714	Motor vehicle parts and accessories -----	62 007.3	1 401.7	1 167.5	234.2	1 159.8	96.0
3715	Truck trailers -----	3 433.5	123.6	81.5	42.1	81.0	28.1
3721	Aircraft -----	39 092.7	22 621.6	21 493.9	1 127.7	21 262.5	1 026.6
3724	Aircraft engines and engine parts -----	20 262.1	10 366.8	8 554.5	1 812.3	8 397.8	1 486.7
3728	Aircraft equipment, n.e.c.	17 923.4	10 351.1	4 538.6	5 812.5	4 430.5	5 614.1
3731	Ship building and repairing -----	28 504.4	7 368.4	7 179.7	188.7	6 601.1	103.4
3761	Guided missiles and space vehicles -----	21 565.8	20 315.1	19 102.5	1 212.6	16 729.8	883.3
3764	Space propulsion units and parts -----	3 537.1	3 365.9	2 523.2	842.7	1 371.5	790.4
3769	Space vehicle equipment, n.e.c.	1 182.2	(D)	(D)	118.8	(D)	85.9
3795	Tanks and tank components -----	2 521.8	2 328.7	2 028.3	300.4	2 028.3	299.9
38	Instruments and related products -----	56 127.0	5 640.4	3 012.4	2 628.0	2 343.2	1 547.7
3811	Engineering and scientific instruments -----	3 973.3	1 026.7	442.1	584.6	364.1	554.4
3823	Process control instruments -----	4 788.9	170.0	68.0	102.0	53.6	45.5
3824	Fluid meters and counting devices -----	938.6	11.2	2.0	9.2	.6	2.2
3825	Instruments to measure electricity -----	7 703.3	1 533.8	848.7	685.1	701.8	524.3
3829	Measuring and controlling devices, n.e.c.	2 720.7	(D)	176.6	(D)	(D)	210.6
3832	Optical instruments and lenses -----	5 318.9	971.5	598.9	372.6	368.7	147.3
3842	Surgical appliances and supplies -----	8 532.5	555.9	415.2	140.7	308.9	63.4
3851	Ophthalmic goods -----	1 689.4	21.9	3.2	18.7	2.9	-
3861	Photographic equipment and supplies -----	19 240.5	(D)	443.1	(D)	(D)	-
3873	Watches, clocks, and watchcases -----	1 220.9	15.5	14.6	.9	-	-

Note: Totals may not add to sum of the detail due to unadjusted rounding.

¹Standard error estimates are calculated from the unadjusted (reciprocal) government shipments which were reported on the MC-9675. No adjustment has been made to the standard error for the ratio estimation to Census of Manufactures levels. See appendix B for a description of the methodology.

²Data in the value of shipments column represent value of work done rather than value of shipments. Consequently, the formula for computing value added by manufacture was modified to exclude any change between beginning- and end-of-year inventories.

Agency: 1987—Con.

Government shipments—Con.						Standard error of estimate (percent) for total Government shipments¹	SIC code
To NASA		To DOE		To other agencies			
Prime contracts	Subcontracts	Prime contracts	Subcontracts	Prime contracts	Subcontracts		
3 333.8	861.0	3 650.4	458.6	6 410.0	7 349.4	2	1972
32.9	1.1	2 635.3	173.7	15.6	91.6	16	28
32.9	.3	-	-	3.6	17.4	4	2813
-	-	2 634.9	173.2	7.0	64.7	19	2819
(A)	.8	.4	.5	5.0	9.5	12	2892
(A)	(A)	-	.1	.6	101.3	42	29
(A)	(A)	-	.1	.6	101.3	42	2911
(D)	.1	(D)	-	(D)	(D)	7	30
(D)	-	(D)	-	(D)	(D)	5	3011
(A)	.1	-	-	(A)	18.0	18	3041
(D)	-	(D)	-	88.4	78.5	8	3069
(A)	(D)	(D)	14.3	(D)	(D)	5	33
(D)	(D)	(D)	(D)	(D)	(D)	(X)	3339
(D)	(D)	(D)	(D)	(D)	(D)	(X)	3357
-	2.6	-	-	1.7	85.5	8	3361
(D)	(D)	(D)	39.6	113.8	552.9	2	34
-	-	-	-	-	89.7	12	3441
-	.5	4.9	25.2	-	68.7	14	3443
.7	(D)	.2	.5	10.4	(D)	15	3452
-	.1	-	.1	-	18.4	7	3463
(D)	-	(D)	-	(D)	(D)	-	3482
19.7	1.5	2.0	10.6	42.5	71.5	-	3483
-	-	.2	-	.1	2.8	8	3484
(D)	(D)	(D)	-	(D)	(D)	-	3489
.4	3.2	.1	3.2	5.5	114.4	12	3494
-	-	-	-	54.4	69.1	17	3499
97.1	93.0	60.5	19.3	753.9	1 390.9	6	35
(A)	(A)	17.9	(A)	3.1	21.1	15	3511
1.8	.4	.1	.7	3.8	17.9	16	3519
-	-	-	-	8.9	28.8	12	3531
.1	-	-	-	12.3	20.5	9	3537
(D)	-	-	(D)	(D)	(D)	35	3541
-	.7	(A)	.2	56.5	51.2	13	3561
.1	-	-	3.2	1.6	7.0	14	3563
(D)	3.0	2.2	(D)	(D)	(D)	5	3569
90.6	45.5	39.3	10.9	457.4	580.8	8	3573
.8	(A)	1.0	-	193.0	19.1	7	3579
3.3	43.3	-	2.9	1.3	547.6	16	3599
145.9	374.7	202.8	92.0	2 519.0	3 028.2	6	36
.6	.5	.1	.6	.5	38.3	12	3613
.5	1.2	-	-	2.7	52.9	7	3621
(D)	-	(D)	(D)	(D)	6.4	(X)	3622
(D)	-	(D)	-	(D)	(D)	5	3661
119.9	335.5	11.1	7.3	2 259.6	1 144.4	7	3662
(D)	(D)	(D)	(D)	43.0	(D)	7	3671
12.3	10.4	-	54.2	8.5	583.5	14	3674
-	-	-	-	.2	117.3	3	3675
(A)	(A)	-	-	.2	24.8	16	3676
-	-	(A)	.3	.1	34.5	27	3677
.2	.2	(A)	-	2.8	214.4	18	3678
1.2	23.3	185.7	.4	23.6	627.6	7	3679
-	-	-	-	1.5	28.1	14	3691
.5	(D)	(D)	(D)	(D)	7.5	(X)	3692
3.2	-	2.8	2.1	122.1	25.8	16	3693
-	-	-	-	-	28.5	45	3699
2 931.2	323.6	95.6	110.7	2 365.3	941.9	1	37
(D)	-	.4	-	71.4	48.4	(X)	3711
-	-	.4	-	385.7	50.2	40	3713
-	-	-	-	7.7	138.2	5	3714
-	-	-	-	.5	14.0	52	3715
(D)	(D)	(D)	(D)	(D)	(D)	-	3721
(D)	(D)	(D)	(D)	78.6	(D)	3	3724
12.5	37.7	32.9	3.4	62.7	157.3	5	3728
.1	-	-	82.6	578.5	2.7	6	3731
1 485.5	78.7	(A)	1.6	887.2	249.0	-	3761
1 103.2	35.1	(D)	(D)	(D)	(D)	-	3764
(D)	(D)	(D)	(D)	(D)	(D)	(X)	3769
-	-	-	-	-	.5	1	3795
101.6	60.1	20.5	8.9	547.1	1 011.3	4	38
.9	1.6	(A)	.3	77.1	28.3	12	3811
.5	7.0	1.3	-	12.6	49.5	14	3823
(A)	-	.2	-	1.2	7.0	13	3824
34.3	8.4	1.4	.6	111.2	151.8	10	3825
(D)	3.4	(D)	2.0	29.5	(D)	(X)	3829
48.2	38.8	8.1	6.0	173.9	180.5	11	3832
13.3	.9	(A)	-	93.0	76.4	10	3842
-	-	.3	-	-	18.7	8	3851
(D)	-	(D)	-	34.1	(D)	(X)	3861
-	-	-	-	14.6	.9	43	3873

Table 3. Number of Employees Involved in Prime and Subcontract Shipments to the

[Thousands]

SIC code	Industry	Employees involved in Government shipments					
		Employees	Total	Prime contracts	Subcontracts	To DOD	
						Prime contracts	Subcontracts
1987 SIC BASIS							
	All Industries -----	5 248.2	1 436.0	1 052.6	383.6	940.6	287.1
28	Chemicals and allied products -----	21.9	10.0	7.8	2.2	7.7	2.0
2813	Industrial gases -----	8.1	.2	.1	.1	(A)	-
2892	Explosives -----	13.8	9.8	7.7	2.1	7.7	2.0
29	Petroleum and coal products -----	74.6	3.0	2.7	.3	2.7	.2
2911	Petroleum refining -----	74.6	3.0	2.7	.3	2.7	.2
30	Rubber and miscellaneous plastics products -----	138.4	2.7	1.7	1.0	1.6	(D)
3011	Tires and inner tubes -----	65.4	.6	.5	.1	.5	(D)
3052	Rubber and plastics hose and belting -----	23.2	.3	.1	.2	.1	(D)
3061	Mechanical rubber goods -----	49.8	1.8	1.1	.7	1.0	.3
33	Primary metal industries -----	119.3	6.1	.5	5.6	.4	3.2
3357	Nonferrous wiredrawing and insulating -----	(D)	(D)	(D)	(D)	(D)	(D)
3363	Aluminum die-castings -----	(D)	(D)	(D)	(D)	(D)	(D)
3365	Aluminum foundries -----	26.3	3.7	(A)	3.7	(A)	2.3
34	Fabricated metal products -----	474.2	109.7	77.6	32.1	60.0	24.1
3441	Fabricated structural metal -----	80.9	11.8	8.9	2.9	8.9	1.8
3443	Fabricated plate work (boiler shops) -----	74.6	7.9	.1	7.8	(A)	6.3
3452	Bolts, nuts, rivets, and washers -----	52.0	3.1	1.0	2.1	.9	.4
3463	Nonferrous forgings -----	7.3	2.3	(A)	2.3	(A)	2.1
3482	Small arms ammunition -----	9.0	3.7	3.6	.1	3.6	(D)
3483	Ammunition, except for small arms, n.e.c. -----	41.5	39.2	32.2	7.0	31.3	6.6
3484	Small arms -----	13.3	4.8	3.6	1.2	3.6	1.1
3489	Ordnance and accessories, n.e.c. -----	23.9	23.7	23.0	.7	6.9	(D)
3491	Industrial valves -----	46.2	2.5	1.1	1.4	1.1	.8
3492	Fluid power valves and hose fittings -----	27.9	4.7	2.1	2.6	1.7	2.0
3494	Valves and pipe fittings, n.e.c. -----	25.1	1.2	.1	1.1	.1	.4
3499	Fabricated metal products, n.e.c. -----	72.5	4.8	1.9	2.9	1.9	1.8
35	Industrial machinery and equipment -----	781.7	77.1	32.2	44.9	27.4	25.4
3511	Turbines and turbine generator sets -----	22.9	5.5	5.0	.5	4.8	.3
3519	Internal combustion engines, n.e.c. -----	64.0	3.8	2.3	1.5	2.3	1.4
3541	Machine tools, metal cutting types -----	31.7	.8	.4	.4	.4	.1
3561	Pumps and pumping equipment -----	35.2	3.1	.5	2.6	.5	2.1
3563	Air and gas compressors -----	23.8	1.1	.7	.4	.6	.3
3569	General industrial machinery, n.e.c. -----	40.6	.7	.7	1.0	.7	.4
3571	Electronic computers -----	151.9	16.6	8.0	8.6	6.3	6.7
3572	Computer storage devices -----	43.3	1.2	.8	.4	.3	(A)
3575	Computer terminals -----	15.0	3.0	1.2	1.8	1.2	1.8
3577	Computer peripheral equipment, n.e.c. -----	76.2	4.0	2.2	1.8	1.3	1.2
3579	Office machines, n.e.c. -----	28.5	1.8	1.4	.4	.1	.2
3593	Fluid power cylinders and actuators -----	20.2	9.4	1.8	7.6	1.8	7.1
3599	Industrial machinery, n.e.c. -----	228.4	25.1	7.2	17.9	7.1	3.8
36	Electronic and other electric equipment -----	1 085.5	168.8	76.8	92.1	63.5	57.8
3613	Switchgear and switchboard apparatus -----	44.4	1.5	.3	1.2	.3	.9
3621	Motors and generators -----	74.6	5.5	1.9	3.6	1.8	3.0
3625	Relays and industrial controls -----	66.6	1.2	.3	.9	.2	(D)
3661	Telephone and telegraph apparatus -----	112.3	5.2	4.0	1.2	3.2	(D)
3663	Radio and television communications equipment -----	126.0	48.3	35.8	12.5	28.0	6.2
3669	Communications equipment, n.e.c. -----	21.9	.2	.1	.1	(A)	.1
3672	Printed circuit boards -----	66.6	8.1	.6	7.5	.4	6.8
3674	Semiconductors and related devices -----	184.6	28.3	1.6	26.7	1.4	15.0
3675	Electronic capacitors -----	21.7	2.3	.2	2.1	.2	.1
3676	Electronic resistors -----	15.7	.7	(A)	.7	(A)	.4
3677	Electronic coils and transformers -----	23.9	1.5	(A)	1.5	(A)	.5
3678	Electronic connectors -----	43.8	5.7	1.5	4.2	1.5	1.8
3679	Electronic components, n.e.c. -----	162.6	31.4	9.6	21.8	6.0	15.3
3691	Storage batteries -----	24.2	.9	.3	.6	.3	.2
3692	Primary batteries, dry and wet -----	10.7	2.0	.8	1.2	.7	1.1
3695	Magnetic and optical recording media -----	25.6	1.6	.5	1.1	.4	.8
3699	Electrical equipment and supplies, n.e.c. -----	60.3	24.4	19.2	5.2	19.0	4.6
37	Transportation equipment -----	1 684.5	694.8	590.0	104.8	536.6	89.6
3711	Motor vehicles and car bodies -----	284.4	3.3	3.1	.2	2.9	(A)
3713	Truck and bus bodies -----	37.8	3.1	2.5	.6	.1	(A)
3714	Motor vehicle parts and accessories -----	389.1	16.1	12.9	3.2	12.9	1.7
3715	Truck trailers -----	27.5	1.5	1.0	.5	.9	.4
3721	Aircraft -----	268.2	175.1	167.1	8.0	165.2	7.3
3724	Aircraft engines and engine parts -----	139.6	72.1	52.9	19.2	51.5	14.9
3728	Aircraft parts and equipment, n.e.c. -----	187.7	110.1	63.2	46.9	62.2	44.1
3731	Ship building and repairing -----	120.2	105.7	102.8	2.9	94.2	1.5
3761	Guided missiles and space vehicles -----	166.7	150.6	142.7	7.9	120.5	5.3
3764	Space propulsion units and parts -----	31.8	29.5	23.3	6.2	12.9	5.8
3769	Space vehicle equipment, n.e.c. -----	15.1	12.7	5.8	6.9	.6	6.3
3795	Tanks and tank components -----	16.4	15.0	12.7	2.3	12.7	2.3
38	Instruments and related products -----	868.1	363.8	263.3	100.6	240.7	84.4
3812	Search and navigation equipment -----	369.4	313.5	233.2	80.3	217.7	72.6
3821	Laboratory apparatus and furniture -----	17.1	1.0	.7	.3	.1	.1
3823	Process control instruments -----	53.4	3.3	1.3	2.0	1.1	.6
3824	Fluid meters and counting devices -----	10.1	(D)	(A)	(D)	(A)	-
3825	Instruments to measure electricity -----	85.2	20.4	12.5	7.9	10.3	5.0
3826	Analytical instruments -----	31.2	2.6	1.6	1.0	.6	.2
3827	Optical instruments and lenses -----	20.1	4.4	2.6	1.8	1.8	1.4
3829	Measuring and controlling devices, n.e.c. -----	41.0	(D)	2.1	(D)	(D)	3.2
3842	Surgical appliances and supplies -----	78.5	6.1	4.2	1.9	3.3	.7
3844	X-ray apparatus and tubes -----	8.7	1.2	.5	.7	.2	.5
3845	Electromedical equipment -----	29.2	1.3	1.1	.2	.4	.1
3851	Ophthalmic goods -----	24.4	.3	(A)	.3	(A)	-
3861	Photographic equipment and supplies -----	88.0	(D)	3.4	(D)	(D)	-
3873	Watches, clocks, watchcases, and parts -----	11.8	(A)	-	(A)	-	-

Government by Industry and Agency: 1987

Employees involved in Government shipments—Con.							SIC code
To NASA		To DOE		To other agencies			
Prime contracts	Subcontracts	Prime contracts	Subcontracts	Prime contracts	Subcontracts		
						1987	
32.6	9.1	21.5	3.7	57.9	83.7		
.1	(A)	(A)	(A)	(A)	.2	28	
.1	(A)	-	-	(A)	.1	2813	
-	(A)	(A)	(A)	(A)	.1	2892	
-	-	-	-	-	.1	29	
-	-	-	-	-	.1	2911	
(D)	(D)	(D)	-	(D)	(D)	30	
(D)	(D)	(D)	-	(D)	(D)	3011	
-	-	-	-	-	-	3052	
-	-	-	-	.1	.4	3061	
(D)	(D)	(D)	.2	(D)	(D)	33	
(D)	(D)	(D)	(D)	(D)	(D)	3357	
-	(A)	-	-	(A)	1.4	3363	
-	-	-	-	-	-	3365	
.3	.1	16.1	.4	1.2	7.5	34	
(A)	(A)	(A)	(A)	(A)	1.1	3441	
(A)	(A)	(A)	.2	(A)	1.3	3443	
(D)	-	(A)	(A)	.1	1.7	3452	
.2	(A)	(A)	-	-	.2	3463	
(D)	(A)	(A)	.1	(D)	(D)	3482	
(D)	(A)	(A)	-	.7	.3	3483	
(A)	(A)	16.0	-	(A)	.1	3484	
-	(A)	-	-	(D)	(D)	3489	
-	-	-	-	-	.6	3491	
-	-	-	-	.4	.6	3492	
-	-	-	.1	-	.6	3494	
-	-	-	-	-	1.1	3499	
.7	.6	.3	.1	3.8	18.8	35	
(D)	(D)	(D)	(D)	(D)	(D)	3511	
(A)	-	-	-	(A)	.1	3519	
(D)	(A)	-	(D)	(D)	(D)	3541	
(A)	(A)	-	(A)	-	.5	3561	
.4	(A)	-	(A)	.1	.1	3563	
(A)	.1	.1	-	-	.6	3569	
(A)	(A)	(A)	-	1.2	1.8	3571	
(A)	(D)	(D)	(A)	.5	.4	3572	
(A)	(A)	(A)	(A)	-	-	3575	
(A)	(A)	(A)	(A)	(D)	(D)	3577	
(A)	(A)	(A)	(D)	1.2	.2	3579	
(A)	.1	-	(A)	(D)	(D)	3593	
-	-	-	-	.1	14.0	3599	
.6	2.1	3.6	.9	9.1	31.3	36	
(D)	(A)	(A)	(A)	(A)	.3	3613	
(D)	(A)	(D)	(A)	(D)	.6	3621	
(A)	(D)	(A)	(D)	(D)	.4	3625	
-	-	-	(A)	.8	.7	3661	
.4	1.6	(A)	(A)	7.4	4.7	3663	
(A)	-	-	-	.1	-	3669	
.1	.1	.1	-	.1	.6	3672	
-	.2	-	.8	.1	10.7	3674	
-	-	-	-	-	2.0	3675	
(A)	-	-	-	(A)	.3	3676	
(A)	(A)	(A)	(A)	(A)	1.0	3677	
(A)	.1	3.3	(A)	(A)	2.4	3678	
(A)	(A)	(D)	(D)	.3	6.4	3679	
(D)	(A)	(D)	(D)	(A)	.4	3691	
(D)	(D)	(D)	(D)	(D)	(D)	3692	
-	-	-	-	(A)	.3	3695	
-	-	-	-	.2	(D)	3699	
29.4	4.0	1.1	1.7	22.9	9.5	37	
(D)	-	(D)	-	.2	.2	3711	
-	-	(A)	-	2.4	.6	3713	
-	-	-	-	-	1.5	3714	
-	-	-	-	.1	.1	3715	
.9	.1	.00	.00	(D)	.6	3721	
(D)	2.0	.00	(D)	(D)	(D)	3724	
.1	.3	.03	(A)	.6	2.5	3728	
-	-	-	(A)	8.6	.1	3731	
12.4	1.1	.00	(D)	(D)	1.5	3761	
(D)	.3	-	.3	(D)	(D)	3764	
5.2	.2	-	-	-	.1	3769	
-	-	-	-	-	-	3795	
1.5	2.2	.4	.4	20.7	13.6	38	
.7	1.5	.1	.2	14.7	6.0	3812	
(A)	-	-	-	.6	.2	3821	
-	.4	(A)	(A)	.2	1.0	3823	
.1	(A)	-	(A)	(A)	(D)	3824	
(D)	.1	-	(A)	2.0	2.9	3825	
.3	(A)	(D)	(A)	.8	.7	3826	
(D)	(A)	(A)	(A)	.5	.3	3827	
.2	(A)	(A)	(A)	.1	(D)	3829	
(A)	-	(A)	-	.7	1.2	3842	
(A)	-	(A)	(A)	.2	.2	3844	
-	-	-	-	.7	.1	3845	
-	-	-	-	.3	.3	3851	
-	-	-	-	.2	(D)	3861	
-	-	-	-	-	(A)	3873	

Table 3. Number of Employees Involved in Prime and Subcontract Shipments to the

[Thousands]

SIC code	Industry	Employees involved in Government shipments					
		Employees	Total	Prime contracts	Subcontracts	To DOD	
						Prime contracts	Subcontracts
	1972 SIC BASIS						
	All industries -----	5 551.3	1 465.8	1 061.3	404.6	927.8	306.8
28	Chemicals and allied products -----	94.1	39.8	36.2	3.6	7.7	2.0
2813	Industrial gases -----	8.1	.2	.1	.1	(A)	-
2819	Industrial inorganic chemicals, n.e.c. -----	72.2	29.8	28.4	1.4	(A)	-
2892	Explosives -----	13.8	9.8	7.7	2.1	7.7	2.0
29	Petroleum and coal products -----	83.7	3.1	2.7	.4	2.7	.3
2911	Petroleum refining -----	83.7	3.1	2.7	.4	2.7	.3
30	Rubber and miscellaneous plastics products -----	189.8	5.9	3.4	2.5	2.6	(D)
3011	Tires and inner tubes -----	65.4	.4	.3	.1	.2	(D)
3041	Rubber and plastics hose and belting -----	23.2	.6	.3	.3	.3	(A)
3069	Fabricated rubber products, n.e.c. -----	101.2	4.9	2.8	2.1	2.1	(D)
33	Primary metal industries -----	119.4	5.5	.5	5.0	.4	2.9
3339	Primary nonferrous metals, n.e.c. -----	(D)	(D)	(D)	(D)	(D)	(D)
3357	Nonferrous wire drawing and insulating -----	(D)	(D)	(D)	(D)	(D)	(D)
3361	Aluminum foundries -----	54.5	4.0	(A)	4.0	(A)	2.4
34	Fabricated metal products -----	476.5	110.8	79.1	31.7	65.2	(D)
3441	Fabricated structural metal -----	80.9	12.4	9.9	2.5	9.9	1.4
3443	Fabricated plate work (boiler shops) -----	74.6	9.0	.8	8.2	.7	7.0
3452	Bolts, nuts, rivets, and washers -----	52.0	2.8	.9	1.9	.8	.3
3463	Nonferrous forgings -----	7.3	2.3	(A)	2.3	(A)	2.1
3482	Small arms ammunition -----	9.0	4.2	.1	4.1	.1	(D)
3483	Ammunition, except for small arms, n.e.c. -----	41.5	39.0	32.5	6.5	31.4	6.0
3484	Small arms -----	13.3	4.8	3.6	1.2	3.6	1.1
3489	Ordnance and accessories, n.e.c. -----	23.9	23.9	22.1	1.8	10.2	(D)
3494	Valves and pipe fittings -----	101.5	7.4	2.6	4.8	2.5	3.2
3499	Fabricated metal products, n.e.c. -----	72.5	5.0	2.6	2.4	2.0	1.3
35	Machinery, except electrical -----	937.7	89.5	35.1	54.4	29.0	36.7
3511	Turbines and turbine generator sets -----	22.9	3.4	2.7	.7	2.6	.6
3519	Internal combustion engines, n.e.c. -----	64.0	4.7	2.3	2.4	2.3	2.2
3531	Construction machinery -----	81.2	2.9	1.4	1.5	1.3	1.2
3537	Industrial trucks and tractors -----	21.6	.8	.5	.3	.3	(A)
3541	Machine tools, metal cutting types -----	31.7	1.3	.4	.9	.3	.1
3561	Pumps and pumping equipment -----	49.5	6.0	2.0	4.0	1.4	3.3
3563	Air and gas compressors -----	23.8	1.1	.7	.4	.7	.3
3569	General industrial machinery, n.e.c. -----	55.3	2.5	1.1	1.4	.9	.7
3573	Electronic computing equipment -----	310.7	24.7	12.7	12.0	9.2	9.0
3579	Office machines, n.e.c., and typewriters -----	28.5	1.8	1.3	.5	.1	.3
3599	Machinery, except electrical, n.e.c. -----	248.5	40.3	10.0	30.3	9.9	19.0
36	Electric and electronic equipment -----	1 487.7	473.6	302.3	171.3	273.2	126.5
3613	Switchgear and switchboard apparatus -----	50.8	1.3	.4	.9	.3	.5
3621	Motors and generators -----	74.6	5.4	1.9	3.5	1.8	2.6
3622	Industrial controls -----	52.5	(D)	.2	(D)	(D)	(D)
3661	Telephone and telegraph apparatus -----	104.8	3.2	2.4	.8	(D)	.2
3662	Radio and TV communication equipment -----	544.5	367.4	276.2	91.2	253.0	76.5
3671	Electron tubes, all types -----	25.8	10.1	5.5	4.6	5.0	3.9
3674	Semiconductors and related devices -----	184.6	28.2	2.0	26.2	1.7	15.9
3675	Electronic capacitors -----	21.7	2.7	.2	2.5	.2	.3
3676	Electronic resistors -----	15.7	1.0	(A)	1.0	(A)	.4
3677	Electronic coils and transformers -----	23.9	1.4	.1	1.3	.1	.5
3678	Electronic connectors -----	43.8	5.3	1.5	3.8	1.5	1.2
3679	Electronic components, n.e.c. -----	250.3	41.6	9.4	32.2	6.0	22.3
3691	Storage batteries -----	24.2	.7	.2	.5	.2	.2
3692	Primary batteries, dry and wet -----	10.4	(D)	.8	(D)	.7	(D)
3693	X-ray and electromedical apparatus -----	37.9	2.5	1.5	1.0	.6	.7
3699	Electrical equipment and supplies, n.e.c. -----	22.2	.3	-	.3	-	-
37	Transportation equipment -----	1 684.9	680.2	571.6	108.6	522.7	94.1
3711	Motor vehicles and car bodies -----	284.4	(D)	(D)	.1	(D)	-
3713	Truck and bus bodies -----	37.8	2.7	2.1	.6	.1	(A)
3714	Motor vehicle parts and accessories -----	389.1	12.3	10.3	2.0	10.2	.6
3715	Truck trailers -----	27.5	1.7	1.1	.6	1.1	.4
3721	Aircraft -----	268.2	174.6	165.1	9.5	163.4	8.9
3724	Aircraft engines and engine parts -----	140.0	73.0	55.9	17.1	54.6	13.0
3728	Aircraft equipment, n.e.c. -----	187.7	98.8	44.0	54.8	42.8	51.8
3731	Ship building and repairing -----	120.2	104.7	101.8	2.9	93.1	1.5
3761	Guided missiles and space vehicles -----	166.7	151.3	141.7	9.6	123.3	7.4
3764	Space propulsion units and parts -----	31.8	30.1	22.8	7.3	12.1	6.8
3769	Space vehicle equipment, n.e.c. -----	15.1	(D)	(D)	1.9	(D)	1.5
3795	Tanks and tank components -----	16.4	14.4	12.2	2.2	12.2	2.2
38	Instruments and related products -----	477.5	57.4	30.4	27.1	24.3	19.1
3811	Engineering and scientific instruments -----	42.0	12.2	4.4	7.8	3.8	7.4
3823	Process control instruments -----	53.4	2.0	.8	1.2	.7	.5
3824	Fluid meters and counting devices -----	10.1	.1	(A)	.1	(A)	(A)
3825	Instruments to measure electricity -----	85.2	16.2	9.1	7.1	7.4	5.4
3829	Measuring and controlling devices, n.e.c. -----	33.0	(D)	2.2	(D)	(D)	3.6
3832	Optical instruments and lenses -----	51.1	9.8	5.8	4.0	3.8	1.4
3842	Surgical appliances and supplies -----	78.5	6.7	4.7	2.0	3.7	.8
3851	Ophthalmic goods -----	24.4	.2	(A)	.2	(A)	-
3861	Photographic equipment and supplies -----	88.0	(D)	3.3	(D)	(D)	-
3873	Watches, clocks, and watchcases -----	11.8	(A)	(A)	-	-	-

Note: Totals may not add to sum of the detail due to unadjusted rounding.

Government by Industry and Agency: 1987—Con.

Employees involved in Government shipments—Con.							SIC code
To NASA		To DOE		To other agencies			
Prime contracts	Subcontracts	Prime contracts	Subcontracts	Prime contracts	Subcontracts		
						1972	
30.1	8.9	45.2	4.7	58.2	84.2		
.1	(A)	28.4	.9	-	.7	28	
.1	(A)	-	-	(A)	.1	2813	
-	(A)	28.4	.9	(A)	.5	2819	
-	(A)	(A)	(A)	(A)	.1	2892	
-	-	-	-	-	.1	29	
-	-	-	-	-	.1	2911	
						30	
(D)	(A)	(D)	-	(D)	(D)	(D)	
(D)	(A)	(D)	-	(D)	(D)	(D)	
(D)	-	(D)	-	.7	(D)	.3	
-	(D)	(D)	-	-	(D)	3041	
(D)	(D)	(D)	-	-	(D)	3069	
(D)	(D)	(D)	.2	(D)	(D)	33	
(D)	(D)	(D)	(D)	(D)	(D)	3339	
-	.2	-	-	(D)	(D)	3357	
-	-	-	-	(A)	1.4	3361	
(D)	(D)	(D)	.5	1.7	6.8	34	
-	-	-	-	-	1.1	3441	
-	(A)	.1	.3	-	.9	3443	
(A)	(D)	(A)	(A)	.1	(D)	3452	
(D)	-	(D)	-	-	.2	3463	
.2	(A)	(A)	.1	(D)	(D)	3482	
(D)	(D)	(D)	-	.9	.4	3483	
(A)	(A)	(A)	-	(A)	.1	3484	
(A)	(A)	(D)	(A)	(D)	(D)	3489	
-	-	-	-	.1	1.5	3494	
-	-	-	(A)	.6	1.1	3499	
.6	.8	.4	.1	5.1	16.8	35	
(A)	(A)	(D)	-	(D)	.1	3511	
-	-	-	(A)	(A)	.2	3519	
-	-	-	-	.1	.3	3531	
(D)	-	-	-	.2	.3	3537	
(A)	(A)	-	(D)	(D)	(D)	3541	
(A)	-	-	(A)	.6	.7	3561	
(D)	(A)	(D)	(A)	(A)	.1	3563	
.5	.2	(D)	(D)	(D)	(D)	3569	
(A)	(A)	(A)	(A)	(D)	2.8	3573	
(A)	.5	(A)	-	1.2	.2	3579	
-	-	-	(A)	.1	10.8	3599	
1.4	3.6	3.4	1.3	24.3	39.9	36	
(A)	(A)	(A)	(A)	.1	.4	3613	
(A)	(A)	-	-	.1	.9	3621	
(D)	-	(D)	(D)	(D)	.1	3622	
(D)	-	(D)	-	(D)	(D)	3661	
1.2	3.1	.1	.1	21.9	11.5	3662	
(D)	(D)	(D)	(D)	.4	(D)	3671	
.1	.1	-	.8	.2	9.4	3674	
-	-	-	-	-	2.2	3675	
-	-	-	-	(A)	.6	3676	
-	-	-	(A)	-	.8	3677	
(A)	(A)	-	-	(A)	2.6	3678	
(A)	.3	3.2	(A)	.2	9.6	3679	
(A)	(D)	(D)	(D)	(D)	.3	3691	
(A)	-	(A)	(A)	.8	(A)	3692	
-	-	-	-	-	.3	3693	
-	-	-	-	-	.3	3699	
26.7	3.5	.9	1.6	21.3	9.4	37	
(D)	-	(A)	-	.2	.1	3711	
-	-	(A)	-	2.0	.6	3713	
-	-	-	-	.1	1.4	3714	
(D)	(D)	(D)	(D)	-	.2	3715	
(D)	.3	(D)	(D)	(D)	(D)	3721	
.1	-	.3	(A)	.4	(D)	3724	
-	-	-	(A)	.8	2.7	3728	
12.1	.8	-	1.3	8.7	.1	3731	
10.2	.3	(D)	(A)	6.3	1.4	3761	
(D)	(D)	(D)	(D)	(D)	(D)	3764	
-	-	-	(D)	(D)	(D)	3769	
-	-	-	-	-	-	3795	
1.0	.7	.2	.1	4.9	7.2	38	
(A)	(A)	(A)	(A)	.6	.4	3811	
(A)	.1	-	-	.1	.6	3823	
-	-	(A)	-	(A)	.1	3824	
.4	.1	(A)	(A)	1.3	1.6	3825	
(D)	(A)	(D)	(A)	.3	(D)	3829	
.3	.4	.1	.1	1.6	2.1	3832	
.2	(A)	-	-	.8	1.2	3842	
(D)	-	(A)	-	-	.2	3851	
-	-	-	-	(A)	(D)	3861	
-	-	-	-	-	(A)	3873	



APPENDIX A.

Limitations of the Data and Explanation of Terms

LIMITATIONS OF THE DATA

The survey of shipments to Federal Government agencies was conducted to measure the extent of Government procurement in 69 manufacturing industries. Similar data for other manufacturing industries which may have made shipments to the Federal Government are not available. Therefore, the data at the U.S. level do not represent all Federal Government procurement, only that of the industries surveyed.

For the most part, shipments to the Federal Government in this report consist of finished goods or components produced to military specifications. The major portion of Government business for these industries, with the exception of the machinery industries, is subject to renegotiation, and therefore, is separately identified in the records of the respondents. Government shipments consist of products shipped to Federal agencies, their contractors, subcontractors, and suppliers. The Government total is further subdivided into shipments (1) on Government prime contracts and (2) to other manufacturers in ultimate performance of Federal Government contracts (subcontracts).

The survey was designed primarily to measure the volume of shipments to the Federal Government made by prime contracting industries and was not intended to include all manufacturing industries that may have been engaged in subcontracting activities related to Government contracts. In interpreting the figures for subcontract work, note that these industries do not represent all "basic materials" industries and "other components" industries that are important in subcontracts. Shipments of materials and components purchased by the Government and furnished to contractors supplying finished equipment were reported as prime contracts.

Furthermore, there is no indication of the level of subcontracts (e.g., first tier, second tier, etc.) Because of the nature of the industries surveyed, it is likely that, except for a few industries such as electronic components, most of the subcontracting is first tier only, and the pyramid of shipments values from one tier to another is not large.

The particular sample selected for this survey is one of a large number of similar probability samples of the same size that could have been selected by chance, using the same sample design. Each of the possible samples would yield somewhat different sets of results. The sampling errors (the differences between the estimates obtained and the results theoretically obtainable from a comparable complete canvass of the same target universe) are unknown. Guides to the potential size of the sampling errors, however, are provided by the estimated relative standard

errors of the estimates. These are shown in the report for total value of Government shipments for each industry. On the average, relative standard errors will be higher for the detailed figures than for the aggregates.

In conjunction with its associated estimate, the relative standard error (computed as the estimated standard error of the estimate divided by the value of the estimate itself) may be used to define confidence intervals, ranges which could be expected to include comparable complete coverage values for specified percentages of all possible samples. The complete coverage value would be included in the range:

1. From one standard error below to one standard error above the derived estimate for about two-thirds of all samples.
2. From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.
3. From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference that the comparable complete coverage results would be within the indicated ranges would be correct in approximately the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates shown would differ from complete coverage results by as much as one, two, or three standard errors, respectively.

For example, if an estimated total is shown as \$20.0 million with an associated relative standard error of 2 percent, the standard error is \$0.4 million. Then, there is approximately 67 percent confidence that the interval \$19.6 million to \$20.4 million includes the complete coverage total, about 95 percent confidence that the interval \$19.2 million to \$20.8 million includes the complete coverage total, and almost certain confidence that the interval \$18.8 million to \$21.2 million includes the complete coverage total.

In addition to the sampling errors, the estimates are subject to various response and operational errors: errors of collection, reporting, transcription, etc. These operational errors would also occur if a complete canvass were to be conducted under the same conditions as this survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected in the course of the Census Bureau's review of the data for reasonableness and consistency.

An early 1987 Census of Manufactures mailing file was used to select plants for the survey. A comparison of this file with the final Census of Manufactures file showed that a number of small plants were added through the Census processing. Estimates for these plants are included in the adjustment of survey estimates for total employment to final Census results. To the extent that small plants differ in patterns of shipments to Federal agencies, the distributions estimated from the survey may be affected. We are not able to measure the amount of adjustment contributed by these small plants. (See appendix B for an explanation of estimation procedure.)

EXPLANATION OF TERMS

Industry Classification

Sixty nine industries were identified from the 1972 Standard Industrial Classification (SIC) Manual definition of industries and its 1977 supplement, that conduct business with the Federal Government. (The Bureau of Economic Analysis assisted in selecting industries since the results are critical for developing input-output tables.) The sample of manufacturing plants selected for the survey represents these 69 industries.

In 1987, the Standard Industrial Classification system underwent a major revision. After the survey was conducted, plants were reclassified using the 1987 SIC system. The tables are presented on the old and new SIC basis for comparison and to provide a bridge between the systems for the data users. However, exercise caution when using data on the 1987 SIC basis; the survey was not designed to provide accurate estimates of level for the newly defined industries. See appendix D for the relation of 1977 to 1987 SIC industries.

All Employees

This category includes all full-time and part-time employees on the payrolls of operating manufacturing establishments who worked or received pay for any part of the pay

period ended nearest the 12th of the month specified on the report form. Included are all persons on paid sick leave, paid holidays, and paid vacations during this pay period. Officers of corporations are included as employees; proprietors and partners of unincorporated firms are, however, excluded.

The report form requests a total number of employees. We estimated the number of employees by agency by adjusting the total number of employees at the establishment by the proportion of its value of shipments to the particular agency to its total value of shipments.

Value Added by Manufactures

This measure of manufacturing activity is derived by subtracting the cost of materials, supplies, fuel, purchased electricity, and contract work from the value of shipments (or value of production) plus receipts for services rendered. This figure is then adjusted by the addition of value added by merchandising operations (that is sold without further manufacture, processing, or assembly) plus the net change in finished goods and work-in-process inventories between the beginning and end of the year. However value added for 1987 for SIC 3731 was not adjusted for inventory changes between the beginning and ending of the year.

Value of Shipments

This item covers the received or receivable net selling values f.o.b. plant (exclusive of freight and taxes), of all products shipped, both primary and secondary, as well as all miscellaneous receipts such as receipts for contract work performed for others, installation and repair, sales of scrap, and sales of products bought and resold without further processing. Included are all items made by or for each establishment from materials owned by it, whether sold, transferred to other plants of the same company, or shipped on consignment. The net selling value of products made in one plant on a contract basis from materials owned by another was reported by the plant providing the materials.

APPENDIX B.

Description of Survey Sample and Estimating Procedure

The estimates presented in this report are derived from a probability sample of approximately 5,000 manufacturing establishments which were selected from the 1987 Census of Manufactures. The sample included only plants in 69 of the approximately 450 four-digit SIC manufacturing industries. These 69 industries, based on earlier detailed studies, had been shown to be engaged extensively in business with the Federal Government. Many of the 69 industries fall in Major Group 34, 35, 36, 37, or 38.

A certainty cutoff level of 500 employees was arbitrarily defined for the survey; that is, all in-scope establishments with employment of 500 or more were included in the sample with certainty. The smaller establishments were subsequently assigned sampling probabilities that were proportional to their total value of shipments. No establishment, regardless of its shipments, was assigned a probability less than 0.005. Establishments chosen for the survey were assigned weights equal to the reciprocal of their probabilities of selection. Individual establishment data were inflated by their sampling weights to develop industry estimates that are used in the final estimation procedure.

All establishments included in the survey were instructed to report total employment, cost of materials, and value of shipments. These data were to be identical to the data reported for these items on the 1987 Census of Manufactures filed with the Census Bureau for that plant. In addition, the establishments were instructed to indicate by means of a check box inquiry the range of value of shipments made by the establishments to the Federal Government in 1987. Those establishments indicating shipments of \$1 million or more to the Federal Government were asked to report the value of such shipments classified by the specific Government agency to which the products were billed. The remaining plants (those indicating value of shipments of less than \$1 million to the Federal Government) were not required to complete this portion of the inquiry. In order to estimate for the latter

respondents, a linear approximation to the mean value of the range (which the respondent checked) was employed. The following values were used to estimate shipments for establishments that shipped less than \$1 million to the Federal Government:

Up to \$100,000, estimated at \$42,000
 \$100,000 to \$249,999, estimated at \$150,000
 \$250,000 to \$499,999, estimated at \$350,000
 \$500,000 to \$999,999, estimated at \$700,000

These estimates are included in the "other Government agency not specifically known" category.

Government employment by agency was derived for each plant as a straight proration of its total employment by the ratio of Government shipments data by agency total shipments. A Government employment figure is shown in the various tables.

Simple weighted estimates X_{ai}^j of shipments by agency "a" for industry "i" were formed. These estimates were then adjusted as follows to provide final survey estimates $X_{ai}^{||j}$ of shipments for agency "a", industry "i":

Where

$$X_{ai}^{||j} = \left(\frac{Y_i}{Y_i^j} \right) X_{ai}^j$$

$X_{ai}^{||j}$ = the estimate of Government shipments for industry "i" to agency "a".

Y_i^j = the simple weighted estimate of total value of shipments for industry "i" obtained from the sample survey.

Y_i = the value of shipments for industry "i" obtained from the 1987 Census of Manufactures.

X_{ai}^j = the simple weighted estimate of Government shipments for industry "i" to agency "a" obtained from the sample survey.

A similar estimation was used for employment data.



APPENDIX C. Report Form

DUE DATE: WITHIN 60 DAYS AFTER RECEIPT

OMB No. 0607-0624: Approval Expires 12/89

<p>FORM MC-9675 FORMERLY MA-175 (5-25-88)</p> <p>1987 CENSUS OF MANUFACTURES</p> <p>SURVEY OF MANUFACTURERS' SHIPMENTS TO FEDERAL GOVERNMENT AGENCIES</p> <p>U.S. DEPT. OF COMM. BUREAU OF THE CEN.</p> <p>RETURN COMPLETED FORM TO</p> <p>Bureau of the Census 1201 East Tenth Street Jeffersonville, IN 47132</p> <p>IMPORTANT — Refer to the instruction sheet before completing this form. Complete for establishment specified in the address block. Do NOT combine with other establishments in your company.</p>	<p>NOTICE — Response to this inquiry is required by law (title 13, U.S. Code). By section 9 of the same law, your report to the Census Bureau is confidential, it may be seen only by sworn Census employees and may be used only for statistical purposes. The law also provides that copies retained in your files are immune from legal process.</p> <p>In correspondence pertaining to this report refer to this CENSUS FILE NUMBER (11 digits)</p> <p style="text-align: center;">(Please correct any error in name and address, including ZIP Code)</p>												
<p>Item 1A OPERATIONAL STATUS Mark (X) ONE box which best describes this establishment at the end of 1987.</p> <p>111 <input type="checkbox"/> In operation</p> <p>112 <input type="checkbox"/> Temporarily idle</p> <p>113 <input type="checkbox"/> Sold or leased to another company — Report new owner or operator in item 1B</p> <p>114 <input type="checkbox"/> Permanently ceased operations</p>	<p>Item 1B NEW OWNER OR OPERATOR (If you marked code 113 in item 1A)</p> <p>121 Name</p> <p>122 Number and street</p> <p>123 City</p> <p>124 State</p> <p>125 ZIP Code</p> <p>126 Employer Identification No.</p>												
<p>Item 2 AVERAGE TOTAL EMPLOYMENT Report the average total employment (average number of production workers plus all other employees as of pay period March 12) the same as item 2h, census form MA-1000.</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4">1987</th> </tr> <tr> <td>210</td> <td></td> <td></td> <td></td> </tr> </table>	1987				210							
1987													
210													
<p>Item 3 TOTAL COST OF MATERIALS AND SERVICES USED Report the total cost of materials and services used, the same as item 5f, census form MA-1000.</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Bil.</th> <th>Mil.</th> <th>Thou.</th> <th>Dol.</th> </tr> <tr> <td>310</td> <td></td> <td></td> <td></td> </tr> </table>	Bil.	Mil.	Thou.	Dol.	310							
Bil.	Mil.	Thou.	Dol.										
310													
<p>Item 4 TOTAL VALUE OF SHIPMENTS AND OTHER RECEIPTS Report the total value of products shipped and other receipts, the same as item 11a, census form MA-1000.</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="4">1987</th> </tr> <tr> <td>410</td> <td></td> <td></td> <td></td> </tr> </table>	1987				410							
1987													
410													
<p>Item 5 Mark (X) the category which includes the value of products shipped to Federal Government agencies.</p> <table style="width:100%;"> <tr> <td>501 <input type="checkbox"/> NONE</td> <td>503 <input type="checkbox"/> \$100,000 — \$249,000</td> <td>505 <input type="checkbox"/> \$500,000 — \$999,999</td> </tr> <tr> <td>502 <input type="checkbox"/> Up to \$99,999</td> <td>504 <input type="checkbox"/> \$250,000 — \$499,999</td> <td>506 <input type="checkbox"/> \$1,000,000 or more</td> </tr> </table>				501 <input type="checkbox"/> NONE	503 <input type="checkbox"/> \$100,000 — \$249,000	505 <input type="checkbox"/> \$500,000 — \$999,999	502 <input type="checkbox"/> Up to \$99,999	504 <input type="checkbox"/> \$250,000 — \$499,999	506 <input type="checkbox"/> \$1,000,000 or more				
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502 <input type="checkbox"/> Up to \$99,999	504 <input type="checkbox"/> \$250,000 — \$499,999	506 <input type="checkbox"/> \$1,000,000 or more											
<p>Item 6 VALUE OF SHIPMENTS TO FEDERAL GOVERNMENT AGENCIES (Complete only if \$1,000,000 or more)</p> <p>a. Direct (as a prime contractor)</p> <p>(1) Department of Defense (DOD)</p> <p>(2) National Aeronautics and Space Administration (NASA)</p> <p>(3) Department of Energy (DOE)</p> <p>(4) Other Federal agencies</p> <p>(5) TOTAL OF DIRECT SHIPMENTS (Sum of lines (1) through (4))</p> <p>b. Indirect (as a subcontractor) include transfers to other plants of the same company</p> <p>(1) Government agency specifically known</p> <p>(a) DOD</p> <p>(b) NASA</p> <p>(c) DOE</p> <p>(d) Other Federal agencies</p> <p>(2) Government agency not known</p> <p>(3) TOTAL OF INDIRECT SHIPMENTS (Sum of lines (1)a through (1)d and line (2))</p>													
<p>Item 7 CERTIFICATION — This report is substantially accurate and has been prepared in accordance with instructions.</p> <table style="width:100%;"> <tr> <th>Key</th> <th>Area code</th> <th>Number</th> <th>Extension</th> <th>Signature of authorized person</th> </tr> <tr> <td>901</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>				Key	Area code	Number	Extension	Signature of authorized person	901				
Key	Area code	Number	Extension	Signature of authorized person									
901													

1987 CENSUS OF MANUFACTURES

INSTRUCTIONS AND DEFINITIONS

SURVEY ON MANUFACTURERS' SHIPMENTS TO FEDERAL GOVERNMENT AGENCIES (MC-9675)

GENERAL INSTRUCTIONS

The purpose of the questionnaire is to collect data on the value of products shipped by industry to Federal Government agencies. The survey covers average total employment, total cost of materials and services used, and the value of products shipped.

ANSWER ALL QUESTIONS. If you cannot answer a question from your company records, please estimate the answer carefully.

Report all value figures in thousands of dollars.

Example: 1,111,125,628 dollars

The preferred entry is . . .

You may report as follows .

Bil.	Mil.	Thou.	Dol.
1	111	126	
1	111	125	628

Report data on a calendar year basis for 1987. However, if your establishment uses a fiscal year that ends between 10/31/87 and 2/28/88, fiscal year data will be acceptable.

For information concerning the possible use of reporting formats other than the form provided, such as computer tape or printouts, contact Ms. Janet E. Shapiro (301) 763-1755.

Correspondence about your report

In any correspondence with the Census Bureau about your report, please include the title and number of the survey and the 11-digit Census File Number shown in the address box of your report form.

Who should report?

This report covers the manufacturing establishment named in the address box of the form. If your company operates more than one location, REPORT ONLY FOR THOSE ESTABLISHMENTS for which you have a report form.

SPECIFIC INSTRUCTIONS

Item 1A — OPERATIONAL STATUS

Report the status of operations at this plant at the end of 1987.

Idle plants — If this plant was temporarily idle during the entire period covered by this survey, this report should still be completed in its entirety.

Sold or leased plant — If this plant was sold or leased to another company to operate, indicate the month and year this action took place, and report the new owner or operator in item 1B. If your company owned the plant for more than 6 months, complete the survey form for all items applicable for that period of time, and return the form.

All establishments should report total employment, total cost of materials, and total value of shipments. These figures should correspond to the respective items (employment—2h, cost of materials—5f, and value of shipments—11a) as reported in the Annual Survey of Manufactures Form MA-1000. **Some establishments included in this survey may not receive form MA-1000.** These establishments should report these three items in accordance with the instructions provided below. **Please complete these three items even if your plant has no shipments to the Federal Government.** Although reporting these items on both survey forms represents a duplication of reporting, it is very helpful in the accurate processing of this report, since the MA-175 form is processed before the larger MA-1000 survey.

Item 2 — AVERAGE TOTAL EMPLOYMENT — Code 210

(You may follow the definition of employees specified by your State Employment Agency.)

Report the average number of employees at the establishment who worked or received pay for the four pay periods including the 12th of the following months: March, May, August, and November. *Include* all persons on paid sick leave, paid holidays, and paid vacation during these pay periods; *exclude* members of Armed Forces and pensioners carried on your active rolls. *Include* officers at this establishment, if a corporation; if an unincorporated concern, *exclude* proprietor or partners. This figure should correspond to item 2h on the Annual Survey of Manufactures Form MA-1000.

Item 3 — TOTAL COSTS OF MATERIALS AND SERVICES USED — Code 310

This includes:

Cost of materials, parts, components, containers, etc., used — The delivered cost figures reported should cover all raw materials, containers, scrap, and supplies, etc., which were: (a) put into production, (b) used as operating supplies, and (c) used in repair and maintenance.

Cost of products bought and sold as such — The cost of all products bought and resold in the same condition as when purchased and not made part of another product manufactured by this establishment.

Cost of fuels consumed — The total amount actually paid or payable during the year for all fuels consumed for heat, power, or the generation of electricity.

Cost of purchased electricity — The total amount actually paid or payable for electric energy purchased during the year from other companies, or received from other establishments of your company.

Cost of contract work done for you by others (on your materials) — If any contract work was done by others on materials furnished by your establishment, report the total payments made during the year for such work, including freight out and in.

This figure should correspond to item 5f, on the Annual Survey of Manufactures Form MA-1000.

Item 4 — TOTAL VALUE OF SHIPMENTS AND OTHER RECEIPTS — Code 410

Report the total value of products shipped and other receipts.

Include products made elsewhere for this establishment on a contract basis from materials supplied by this establishment. (The cost of these materials should be reported in item code 310.)

Value should be net selling value, f.o.b. plant, after discounts and allowances. *Exclude* freight charges and excise taxes.

Sale of products bought and resold without further processing should also be included.

This figure should correspond to item 11a, on the Annual Survey of Manufactures Form MA-1000.

SPECIAL REPORTING INSTRUCTIONS

Long-term contracts other than shipbuilding and aircraft — Sales that are associated with long-term contracts should normally be reported on a "delivery" rather than a "percentage-of-completion" basis.

Special reporting instructions for shipbuilding and aircraft and aerospace industries — Because of the importance of long-term contracts in the shipbuilding and aircraft and aerospace industries, special instructions have been developed. The following instructions are believed to be consistent with usual accounting practices for these industries. *Include* all sales from production, and receipts for research and development, performed for other companies, individuals, U.S. Government agencies, and foreign governments. However, *exclude* research and development financed by your company. Sales by foreign subsidiaries should be excluded. Transfers within the reporting unit should also be excluded. Transfers to other reporting units should be included.

A. Shipbuilding and repairing — For ships under construction, report the value of work done during the year as shipments. For vessels begun earlier than the beginning of the year or not completed during the year, report only the value of work done during the year. Value of work done during the year may be based on (a) multiplying the estimated percentage of work completed during the year by the contract price of the vessel, or (b) net billings for work done during the year.

B. Aerospace industries —

FIXED PRICE CONTRACT — Report as shipments the (a) value of deliveries during the year of complete aircraft, missiles, space vehicles, and missiles or space vehicle engines. (b) For long-term fixed price contracts sales may be recorded as payments received keeping consistent with the financial reports of the establishment.

COST-PLUS-CONTRACT — Report as shipments the value of work done during the year. Value of work done during the year may be based on (a) multiplying the estimated percentage of work completed during the year by the contract price of aircraft or missile, or (b) net billings for work done during the year.

CONTINUE ON REVERSE

SPECIAL REPORTING INSTRUCTIONS — Continued

Items 5 and 6 — VALUE OF SHIPMENTS TO FEDERAL GOVERNMENT AGENCIES

Government shipments are defined broadly as transactions (including services performed) between your establishment or firm and the Federal Government. They may be either prime (direct) or sub (indirect). Circle the code which represents the dollar volume of your Government shipments. If code 506 is circled, report these shipments to Federal Government agency (item codes 612 through 642). If one of the codes 501 — 505 is circled, do not complete the remaining codes; sign the form and return it.

Products shipped to foreign governments

Government shipments should *include* shipments to foreign governments that are made based upon contracts with the U.S. Government, such as sales under the Foreign Military Assistance Program. *Do not include* as government shipments, shipments to foreign governments where the contract is between your firm and the foreign government even though the sale may have been subject to approval by an agency of the Federal Government.

Item 6A — DIRECT (PRIME CONTRACT) SHIPMENTS — Codes 612 through 616

Prime or direct contracts are defined as those where the manufacturing establishment or firm has entered into a contract directly with a Federal Government agency. Distribute the amount of shipments to the Federal agencies listed in codes 612 to 616. Do not reduce the amount of prime contracts by that which is subcontracted to another company or to another plant of your firm.

Include only those amounts which you have shipped to the Federal Government during **1987** (see "Reporting Period") even though the overall contract may extend for several years. The only exceptions to this principle of reporting value of shipments, f.o.b. plant, during **1987** are the shipbuilding industry (SIC 3731), and the complete aircraft and missile industry (SIC 3721). Refer to the special reporting instructions on definitions for these SIC codes.

Item 6B — INDIRECT (SUBCONTRACT) SHIPMENTS — Codes 626 through 641

Subcontracts are defined as shipments from your establishment to another firm or to another establishment of your own company which, in turn, ships the product to the Federal Government. Distribute the amount of shipments by the Federal agency (if known) in item codes 626 through 629. If the ultimate Federal agency is unknown, use item code 630. Only *include* those amounts which you have actually shipped to another firm or establishment during **1987** (see "Reporting Period") even though the overall contract may extend for several years.

Include only work done by you in supplying "special" parts, components, or assemblies in accordance with a prime or subcontractor's designs, specifications, or directions; and services performed.

Note that the value of transfers to other plants of the same company is to be reported in these subcontract columns.

It is recognized that indirect government work is not always identified as such. In view of this, estimates will be acceptable in those instances.

**IF YOU HAVE ANY QUESTIONS REGARDING THIS
REPORT, PLEASE CALL (301) 763-1755.**



APPENDIX D.

Relation of 1977 to 1987 SIC Industries

1977 code	1977 short title	1987 code	1987 short title
2813	Industrial Gases		(NC)
2819	Industrial Inorganic Chemicals, N.E.C.	2819 part	Industrial Inorganic Chemicals, N.E.C.
2892	Explosives		(NC)
2911	Petroleum Refining		(NC)
3011	Tires and Inner Tubes		(NC)
3041	Rubber and Plastics Hose and Belting	3052	Rubber and Plastics Hose and Belting
3069	Fabricated Rubber Products, N.E.C.	3061	Mechanical Rubber Goods
		3069 part	Fabricated Rubber Products, N.E.C.
3339	Primary Nonferrous Metals, N.E.C.	3339 part	Primary Nonferrous Metals, N.E.C.
3357	Drawing and Insulating of Nonferrous Wire		(NC)
3361	Aluminum Foundries (Castings)	3363	Aluminum Die-Castings
		3365	Aluminum Foundries
3441	Fabricated Structural Metal		(NC)
3443	Fabricated Plate Work (Boiler Shops)		(NC)
3452	Bolts, Nuts, Screws, Rivets, and Washers		(NC)
3463	Nonferrous Forgings		(NC)
3482	Small Arms Ammunition		(NC)
3483	Ammunition, Except for Small Arms, N.E.C.		(NC)
3484	Small Arms		(NC)
3489	Ordnance and Accessories, N.E.C.		(NC)
3494	Valves and Pipe Fittings	3492 part	Fluid Power Valves and Hose Fittings
		3491	Industrial Valves
		3494	Valves and Pipe Fittings, N.E.C.
3499	Fabricated Metal Products, N.E.C.		(NC)
3511	Steam, Gas, and Hydraulic Turbines and Turbine Generator Set Units		(NC)
3519	Internal Combustion Machinery and Equipment, N.E.C.		(NC)
3531	Construction Machinery	3531 part	Construction Machinery
3537	Industrial Trucks and Tractors	3537 part	Industrial Trucks and Tractors
3541	Machine Tools, Metal Cutting Types		(NC)
3561	Pumps and Pumping Equipment	3594 part	Fluid Power Pumps and Motors
		3561	Pumps and Pumping Equipment
3563	Air and Gas Compressors		(NC)
3569	General Industrial Machinery and Equipment, N.E.C.	3594 part	Fluid Power Pumps and Motors
		3565 part	Packaging Machinery
		3569	General Industrial Machinery, N.E.C.
3573	Electronic Computing Equipment	3571	Electronic Computers
		3572	Computer Storage Devices
		3575 part	Computer Terminals
		3577	Computer Peripheral Equipment, N.E.C.
		3695 part	Magnetic and Optical Recording Media
3579	Office Machines, N.E.C.	3579 part	Office Machines, N.E.C.
3599	Machinery, Except Electrical, N.E.C.	3593 part	Fluid Power Cylinders and Actuators
		3599	Industrial Machinery, N.E.C.
3613	Switchgear and Switchboard Apparatus	3625 part	Relays and Industrial Controls
		3613	Switchgear and Switchboard Apparatus
3621	Motors and Generators		(NC)
3622	Industrial Controls	3625 part	Relays and Industrial Controls
3661	Telephone and Telegraph Apparatus	3575 part	Computer Terminals
		3661 part	Telephone and Telegraph Apparatus

1977 code	1977 short title	1987 code	1987 short title
3662	Radio and Television Communications Equipment...	3661 part 3663	Telephone and Telegraph Apparatus Radio and Television Communications Equipment
		3812 part 3669	Search and Navigation Equipment Communications Equipment, N.E.C.
		3829 part 3699 part	Measuring and Controlling Devices, N.E.C. Electrical Equipment and Supplies, N.E.C.
3671	Radio and Television Receiving Type Electron Tubes, Except Cathode Ray.....	3671 part	Electron Tubes
3674	Semiconductors and Related Devices.....		(NC)
3675	Electronic Capacitors.....		(NC)
3676	Resistors, for Electronic Applications.....		(NC)
3677	Electronic Coils, Transformers, and Other Inductors		(NC)
3678	Connectors for Electronic Applications.....		(NC)
3679	Electronic Components, N.E.C.....	3264 part 3625 part 3671 part 3672 3695 part 3679	Porcelain Electrical Supplies Relays and Industrial Controls Electron Tubes Printed Circuit Boards Magnetic and Optical Recording Media Electronic Components, N.E.C.
3691	Storage Batteries.....		(NC)
3692	Primary Batteries, Dry and Wet.....		(NC)
3693	X-ray Apparatus and Tubes.....	3844 3845	X-ray Apparatus and Tubes Electromedical Equipment
3699	Electrical Machinery, Equipment, and Supplies, N.E.C.	3641 part 3585 part 3699 part	Electric Lamps Refrigeration and Heating Equipment Electrical Equipment and Supplies, N.E.C.
3711	Motor Vehicles and Passenger Car Bodies.....		(NC)
3713	Truck and Bus Bodies.....		(NC)
3714	Motor Vehicle Parts and Accessories.....		(NC)
3715	Truck Trailers.....		(NC)
3721	Aircraft.....		(NC)
3724	Aircraft Engines and Engine Parts.....		(NC)
3728	Aircraft Parts and Auxiliary Equipment, N.E.C.....	3492 part 3594 part 3593 part 3728	Fluid Power Valves and Hose Fittings Fluid Power Pumps and Motors Fluid Power Cylinders and Actuators Aircraft Parts and Equipment, N.E.C.
3731	Ship Building and Repairing.....		(NC)
3761	Guided Missiles and Space Vehicles.....		(NC)
3764	Guided Missile and Space Vehicle Propulsion Units and Parts.....		(NC)
3769	Guided Missile and Space Vehicle Parts and Auxiliary Equipment.....		(NC)
3795	Tanks and Tank Components.....		(NC)
3811	Engineering and Scientific Instruments.....	3812 part 3821 3826 part 3829 part	Search and Navigation Equipment Laboratory Apparatus and Furniture Analytical Instruments Measuring and Controlling Devices, N.E.C.
3823	Industrial Instruments for Measurement, Display, and Control.....		(NC)
3824	Totalizing Fluid Meters and Counting Devices.....		(NC)
3825	Instruments for Measuring and Testing of Electricity and Electrical Signals.....		(NC)
3829	Measuring and Controlling Devices, N.E.C.....	3829 part	Measuring and Controlling Devices, N.E.C.
3832	Optical Instruments and Lenses.....	3826 part 3829 part 3827	Analytical Instruments Measuring and Controlling Devices, N.E.C. Optical Instruments and Lenses
3842	Orthopedic, Prosthetic, and Surgical Appliances and Supplies.....		(NC)
3851	Ophthalmic Goods.....		(NC)
3861	Photographic Equipment and Supplies.....		(NC)
3873	Watches, Clocks, Clockwork Operated Devices, and Parts.....		(NC)

Note: 1987 SIC industries not shown in the data tables were not represented in the sample.

(NC) No change in SIC industries.

PUBLICATION PROGRAM

1987 CENSUS OF MANUFACTURES

Publications of the 1987 Census of Manufactures, containing preliminary and final data on manufacturing establishments in the United States, are described below. Publications order forms for the specific reports may be obtained from any Department of Commerce district office or from Data User Services Division, Customer Services (Publications), Bureau of the Census, Washington, DC 20233.

Preliminary Reports

Industry series—83 reports (MC87-I-20A(P) to -39D(P))

Preliminary industry data are issued in 83 separate reports covering 459 industries. Preliminary summary data for the U.S. and States are released in one report.

Final Reports

Industry series—83 reports (MC87-1-20A to -39D)

Each of the 83 reports provides information for a group of related industries ("dairy products" includes industries for butter, cheese, milk, etc.). Final figures for the United States are shown for each of the 459 manufacturing industries on quantity and value of products shipped and materials consumed, cost of fuels and electric energy, capital expenditures, assets, rents, inventories, employment, payroll, payroll supplements, hours worked, value added by manufacture, number of establishments, and number of companies. Comparative statistics for earlier years are provided where available.

For each industry, data on value of shipments, value added by manufacture, capital expenditures, employment, and payroll are shown by employment-size class of establishment, State, and degree of primary product specialization.

Geographic area series—51 reports (MC87-A-1 to -51)

A separate report is being published for each State and the District of Columbia. Each report presents data for industry groups and industries on value of shipments, cost of materials, value added by manufacture, employment, payroll, hours worked, new capital expenditures, and number of manufacturing establishments for the State, MSA's, counties, and selected places. Comparative statistics for earlier census years are shown for the State and large MSA's. Manufacturing totals are presented for each county and for places with significant manufacturing activity. Detailed statistics (including inventories, assets, rents, and energy costs) are presented only in statewide totals.

Subject series—7 reports (MC87-S-1 to -7)

Each of the seven reports contains detailed statistics for an individual subject, such as concentration ratios in manufacturing, type of organization, textile machinery in place, distribution of sales by class of customer, manufacturers' shipments to the Federal Government, and a general national-level summary.

Reference series—1 report (MC87-R-1)

The Numerical List of Manufactured and Mineral Products includes a description of the principal products and services published in the 1987 Censuses of Manufactures and Mineral Industries.

Location of Manufacturing Plants—1 report (MC87-LM)

This report includes data for number of establishments by four-digit SIC industry and by employment-size class for counties, incorporated places of 2,500 inhabitants or more, and zip codes for each State. (This report is available only on magnetic tape and CD-ROM.)

Analytical Reports—3 reports (AR87-1 to -3)

Exports From Manufacturing Establishments (AR87-1)

This report presents data on exports by two- and three-digit SIC industry groups for the United States and States. Information is presented on value of direct report shipments and estimates of the employment required to manufacture these products. Included are estimates of employment in manufacturing and nonmanufacturing establishments that supply parts, materials, and services for production of manufactured exports.

Selected Characteristics of Manufacturing Establishments That Export (AR87-2)

This report presents data on the number of manufacturing companies and establishments that export by major group, State, employment size, and ratios of exports to shipments.

Indexes of Production (AR87-3)

The indexes presented in this report are designed to measure the change in physical output of each manufacturing and mineral industry between 1982 and 1987.

MICROFICHE

Every final published report in the 1987 Census of Manufactures will be available on microfiche.

PUBLIC-USE COMPUTER TAPES AND COMPACT DISCS

Data from the final industry series, geographic area series, and the Location of Manufacturing Plants report will be available on public-use computer tapes and compact discs-read only memory (CD-ROM). These tapes will provide the same information found in the final reports. Computerized data products are available for users who wish to summarize, rearrange, or process large amounts of data. These products, with corresponding technical documentation, are sold by Data User Services Division, Customer Services (Tapes), Bureau of the Census, Washington, DC 20233.

OTHER ECONOMIC CENSUSES REPORTS

Data on retail trade, wholesale trade, service industries, construction industries, mineral industries, transportation, enterprise statistics, minority-owned businesses, and women-owned businesses also are available from the 1987 Economic Censuses. A separate series of reports covers the censuses of outlying areas—Puerto Rico, Virgin Islands of the United States, Guam, and the Northern Mariana Islands. Separate announcements describing these reports are available free of charge from Data User Services Division, Customer Services (Publications), Bureau of the Census, Washington, DC 20233.

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